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THE ARCHITECTURAL FORUM

FOR QUARTER CENTURY THE BRICKBUILDER

CHURCH NUMBER

THE SMALL CHURCH
By George F. Marlowe

AN ENGLISH COLLEGE CHAPEL
T. H. Lyon, Architect

ILLUSTRATIONS OF CHURCHES
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OCTOBER 1918

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THE ARCHITECTURAL FORUM

VOLUME XXIX NUMBER 4

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THE CATHEDRAL AT AMIENS, FRANCE
FROM THE SOUTHEAST
FROM PHOTOGRAPH BY GEORGE F. MARLOWE

The Cathedral is reported but slightly damaged from German bombardment but the surrounding buildings are reduced to ruins

THE ARCHITECTURAL FORUM
FOR QUARTER CENTURY THE BRICKBUILDER

VOLUME XXIX OCTOBER 1918 NUMBER 4

The Small and Inexpensive Church

By GEORGE F. MARLOWE

THE utter depravity of that period of Cimmerian darkness of American architecture which probably reached its climax in the late seventies, was in no way more manifest than in church building. When at last the stimulus in England, largely due to the Oxford movement, began to have its influence in this country, there came the dawn of a better era which has already given us much that is worthy of comparison with the English work of the period.

Church of Ouilly-le-Vicomte
Lisieux, Normandy

Though we are known as a Christian nation, yet with our vast wealth, so in evidence that in the eyes of most foreigners coming to our shores we are thought of above all as a nation of spenders and prone to the greatest extravagance, with a few exceptions our churches are mean and unworthy in comparison with those of the poorest of European countries. An English writer of the last century says, "They dwelt in hovels and worshipped in houses exceedingly magnificent; we dwell in cedar and worship in meager or dilapidated churches."

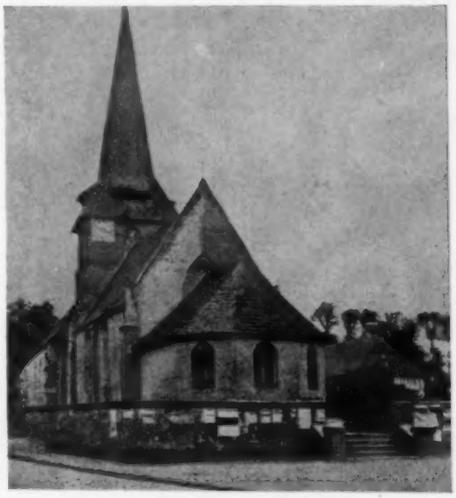
How many of our towns or villages have a parish church such as may be found, literally by hundreds, throughout the smallest hamlets of rural England and France? Or what city has even one to be compared with the half dozen in each of the larger towns or small cities of Europe?

But, we are told, we do not think it best to spend our money in this way. All that was the mistaken zeal of a bygone age. Now we spend it for schools and colleges, hospitals and libraries. But do we? Do we spend it to any great extent for worthy architecture of any kind? To some extent, yes. In proportion to our means as compared to those of our ancestors, probably not. And the reason at least throughout that portion of our country still more or less influenced by the customs of our Puritan forefathers is not far to seek. To the Puritan mind the craving for beauty was in itself a sin. Moreover, any departure from those habits of thrift with which we of New England, at least, are to a great extent still credited, was looked upon with the strongest disapproval. Hence our heritage of bare and uncompromising meeting-houses; and dwellings, of a corresponding period, though not without a certain charm, scarcely less bare and uncompromising. And these characteristics, physical and moral, architectural and religious, as they have been diluted from generation to generation by the intermingling of our brothers from beyond the sea, have been replaced to a great extent by the scarcely less desirable ones to be expected from wealth newly acquired by those naturally unpossessed of the refining qualities requisite for its most intelligent expenditure, and lacking in that appreciation of the beautiful which comes only with generations of association with these self-same qualities.

Notre Dame de Brasseuse, Villeneuve, Normandy

It is with a feeling of great diffidence that any discussion under the present title is under-

taken, for the title in itself seems to imply at the beginning the attempting of a task which, in the very nature of the case, must be more or less unsatisfactory. We are not unmindful, either, of the opinion of a distinguished church architect, that any attempt to build in so temporary a material as wood is an abomination. Yet we may as well face the fact that we sometimes do have the problem of the parish too poor to build at once of stone or even brick throughout, and which for one reason or another is not prepared to undertake even a small part of a structure enabling satisfactory and enduring materials to be nsed.



Church at Languetot, Normandy

Unfortunately, building committees too often insist upon a scheme of some sort that may be completed at once. Sometimes the future of the community, where

Howell Church, Lincolnshire, England

changes follow each other in the rapid manner peculiar to a country still so new as ours, makes the building of a costly structure positively unwise. For the present, there seems to be a real need for buildings of simple design but with a churchly quality, and of a material cheap enough to be within the means of the people who are to use them.

The Georgian or Colonial "style" is adapted to a frank, straightforward treatment, with modern methods of construction, preferably in brick, and it is possible to get much charm and churchly feeling in work of this character. There are a number of examples of this, in one or two instances with a great deal of the spirit of some of the old London churches of the time of Wren. Most of them, however, have had too much of the traditional cold and forbidding quality of the New England meeting-house.

Very successful use has also been made of the brick architecture of Italy, adapted to modern needs, particularly in Catholic churches. Sentiment and tradition, however, seem generally to associate some form, or at least suggestion of the form, of Gothic, with the usage of the Anglican and the Episcopal church.

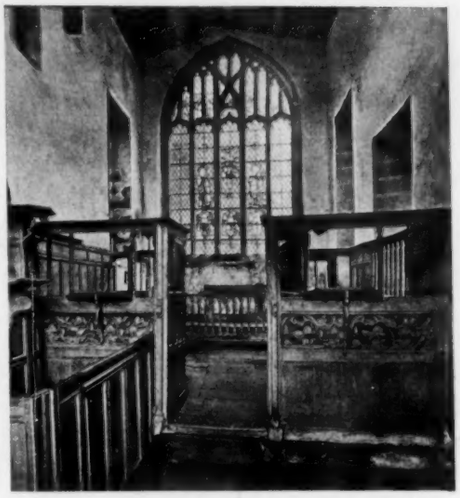
It has always seemed to the writer that the one great outstanding fault in the treatment of smaller churches (and some of the larger ones, too) has been a failure to recognize the simple, fundamental principles of design and the use of materials; the success of the first being absolutely dependent upon good judgment in the latter. Passing over some of the cruder attempts of a quarter of a century ago, with their cobblestone or even shingled buttresses, one still finds heavy overhanging gable ends with verge boards and artificial half-timber, and concrete walls with parapets and buttresses naïvely attempting to imitate the lines of European stone architecture.

It is quite surprising how many men returning from abroad with books full of the most attractive sketches have failed utterly to grasp the essentials when the opportunity came with a church commission. The short nave, low and broad, which persisted in this country for so many years, even in Episcopal and Catholic churches, while in part a concession to the desire on the part of every member of the congregation to "see the minister," was also largely due to a lack of appreciation of the essential principles of church building. It is true that many examples of the short and broad plan are to be found, particularly among the smaller English parish churches. It will be found, however, in most instances that breadth has been obtained by the addition of side aisles, often of a later date than the nave, and separated from it by piers, carrying the walls and roof above. In the Vic-

Church at Neufchatel-en-Bray, Normandy

torian era, these were usually reduced to iron columns, or the aisles omitted, and the width of the nave so exaggerated as to be out of all proportion to the length and height of the building.

There has been a rather natural tendency to turn for inspiration to the familiar country churches of England, and with all the charm which age has given them, in their indescribably beautiful setting, they are, in their way, unsurpassed by anything in Europe or in the world. The fact is, however, that the typical English parish church, with its buttressed and battlemented towers and traceried windows is an absolute impossibility in any material except stone, or in some instances brick, and there is practically nothing about it which is in any way suitable to wood construction, except the roof.



Chapel of Haddon Hall, England

Among the little village churches of Normandy and Brittany, however, though these are generally of stone, one finds the simple plain surfaces and natural roof treatment of a type which lends itself to a free rendering in rough cast, with shingle or slate roof. The belfry, spire or small flêche is frequently of timber, the walls often totally devoid of buttresses or copings, the windows rather small and without tracery, and the whole suggestive of a frank, practical, American construction. In other words, without any improper attempt at imitating one material in the use of another totally different one, we may yet obtain much churchly character with a perfectly proper use of our common building materials.

Such is the little church of Ouilly-le-Vicomte at Lisieux, and the churches at Neuchatel-en-Bray and Languetot, all in Normandy, and all adapted to simple treatment in stucco, with overhanging roofs of shingles or slate. The round-headed windows might be quite honestly rendered in stucco walls with plain "cathedral" glass without tracery, the tower of the former not by any means impossible as a light superstructure on the roof. Notre Dame de Brasseuse is a similar type, though somewhat more monumental.

These are merely examples selected at random, among countless others to be found in France.

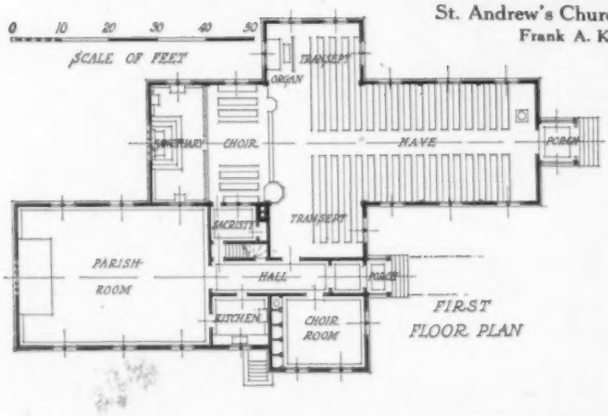
The destruction of great numbers of these little churches within the present battle lines, scarcely less precious in their way than some of the greater ones, is one of the saddest features of the war, and is one of the eternally unforgivable crimes to be laid to the Hun. It is to be hoped that it may be the privilege of the architects of America, as it was the dearest wish of the late Professor Warren, to aid in some small measure in the restoration of some of these churches, together with the towns or villages where they stood, so far as it may be possible to reconstruct in the twentieth century what it has taken the art and labor of many centuries to produce.

Chapel at South Byfield, Mass.
George F. Marlowe, Architect

Episcopal Church at Wollaston, Mass.
I. Howland Jones, Architect

The exterior of Howell church in Lincolnshire is of the English type perhaps most easily rendered in stucco. The well proportioned interior of the chapel at Haddon Hall is also the sort of thing adapted to inexpensive treatment. With the large perpendicular window replaced by a small high window over the altar, without tracery and glazed with heavy leads, or with high dorsal or reredos, and the chancel lighted by windows in the side walls, we should have a very satisfactory design. The roof timbering could perfectly well be of stained spruce. The screen, with balusters and paneling

St. Andrew's Church, Framingham, Mass.
Frank A. Kendall, Architect



characteristic of the period, might well be done in pine or white wood. The carved ornament could be omitted and replaced by plain paneling.

A tower, unless it may be of stone or brick, is a dangerous expedient. For the committee that feels that a church is not a church without one, if the lines of the building were simple the tower might be of stucco, low and broad, placed at the side rather than at the front and utilized as a porch or vestry, avoiding formality which could hardly fail to be unsatisfactory. Needless to say, it should be devoid of any attempt at false buttresses, traceried windows, or battlements. With simple pitched roof, slightly overhanging cornice and finial with vane, it may be fairly acceptable.

All of the foregoing are of a type suitable for the church in a village or small town, and to be effective must have the space and setting of a rural district, if possible among trees and with ample planting of hedges and shrubbery.

No amount of skill on the part of the architect can produce a satisfactory result if the site is an unattractive one, or surrounded by ugly buildings of a character entirely out of keeping with the church, and yet this is frequently entirely ignored and money wasted on an undertaking hopeless from the start.

In the case of the crowded and closely built district of the town or small city (the city church scarcely comes within our province at this time), the problem is a very different one, and more difficult. In fact, in this case, even if the building laws allow it, to attempt to build entirely of wood is quite hopeless. All thought of a tower should be abandoned at the start, as obviously, unless it is of a monumental character, it will be completely dwarfed and wholly insignificant in its surroundings.

Here it is much more difficult to find examples among the old work for precedent or inspiration. In the church building age, excepting in the larger cities like London and Paris, near-by houses were low, often not more than two or three stories, and the prevailing type of country church, with walls carried higher and with moderately lofty tower, perhaps surmounted by a spire, was quite satisfactory. In our case, however, with the means at our disposal, the best result will usually be obtained by giving all the height possible to the façade, accentuating it with vertical breaks or simple pilaster-like buttresses. A small flêche, of wood or metal, more suitable than a tower, will give a touch of interest and suggestion of ecclesiastical character. If skillfully used, brick will often be quite satisfactory. Openings should be simply treated, avoiding traceried windows unless they may be of stone. Wooden tracery painted to look like stone is an abomination. If the fire laws allow, and extreme economy is necessary, fairly satisfactory results may sometimes be obtained by carrying the brick or stone at the sides only as high as the window sills, which should be as high as possible, when stucco may be used above to the eaves.

Most successful, as illustrating some of the principles referred to, is Messrs. Maginnis & Walsh's Chapel of the Ladies of the Cenacle. One might almost believe it to have been directly inspired by the church at Villeneuve. The textures of brick and stone combined in connection with the plain stucco wall surfaces are most agreeable. The building as a whole is extremely simple, its success depending upon the three all-important elements in architectural design: Good proportion, intelligent use of materials, and well considered detail.

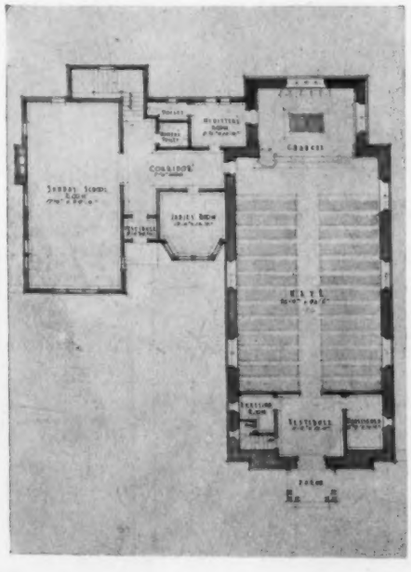
The three little wooden churches at Wollaston, Framingham and South Byfield are perhaps suggestive of the more primitive types in Normandy and Brittany, referred to. In the case of both Wollaston and Framingham, the churches were built some time ago, and the parish halls, etc., added afterwards. The latter is a fairly complete plan for a small mission.

The one at South Byfield was built for a chapel for a religious community rather than for a parish church, and seats about three hundred. It is to be regretted that the shingles might not have been whitewashed, or better still, the walls rough cast, possibly with stone ends, when it might have had much the character of a little Normandy church. It was built complete in 1916, with simple heating apparatus, for about $5000. The interior is finished in gray plaster, the roof trusses and rafters left rough and stained. The altar is of the simplest, but the vestments and red dorsal give a touch of color and interest to its otherwise severe simplicity.

Chapel, Ladies of the Cenacle, Newport, R. I.
Maginnis & Walsh, Architects

The sketch for a Unitarian church in Reading, Mass., is an illustration of a possible treatment for a small town church with parish house, etc. Here, by using stone only for the ends and to the height of the window sills, the cost was kept down. The interior proportions would have been improved if the walls might have been carried higher, though an effect of fair height is obtained in the façade by the breaking back of the vertical lines, the copings of the buttress-like breaks rising slightly above the roof. The parish house was designed to be of stucco on frame construction.

Messrs. Cram and Ferguson's recently completed Universalist Church at Somerville, Mass., is an excellent example of good design in the use of inexpensive materials, — in this case stucco on terra cotta block with brick "trimmings" around doors and windows, and for cornice, string courses and buttress caps. The cost might exclude it from consideration in this article, but the principles of design are so good that they may be used to illustrate our theories and all of them might equally well be applied to a less costly building. The interior walls are treated in a warm gray plaster, applied directly to the blocks, a somewhat uneven surfacing with the trowel evidently having been given with the intention of avoiding the "hard" appearance which the large plain surfaces would otherwise have. The arrangement of the chancel is to be commended. While it may be questioned whether a liturgical plan is really wholly to be desired for a non-liturgical congregation, it does supply the architectural "climax" so indispensable in any church and which is lacking in the "meeting-house." The communion table is well placed with a satisfactory dorsal behind it, and the pulpit and reading desk are exceedingly well designed. (See plates 56, 57.)



Floor Plan and Perspective of Unitarian Church at Reading, Mass.
Adden & Parker, Architects

Two small chapels from this office must be spoken of as further illustrating the principle that satisfactory results may be obtained with the most simple or even primitive materials.

The cost of the stone work of St. Anne's Chapel at Arlington Heights might again exclude it from our consideration, but the principles involved in the interior could be equally well applied to the cheapest forms of construction. The chapel was designed for the use of a conventual order.

In Mr Cram's own chapel at Sudbury, similar theories were carried out. In both cases the interior surfaces of the stone were merely whitewashed. Beams and rafters are of spruce left rough and stained. The screen and stalls of St. Anne's are of planed spruce of the simplest design, with a coat of stain.

St. Anne's Chapel, Arlington, Mass.
Cram & Ferguson, Architects

Too much praise cannot be given to the design for a church at Edgartown, Mass. Mr. Goodhue's beautiful rendering of this was published in *The Brickbuilder* long ago, and it is greatly to be regretted that the church was never built. It would be hard to conceive of a more satisfactory and intelligent use of brick. The plain wall surfaces, simple roof treatment, and round-headed windows, with the exception of the west one, apparently devoid of tracery, all go to show how a really fine result may be obtained with the simplest materials. How much more satisfactory than any attempt at a cheap imitation of Gothic tracery! Although the drawing indicates a rural site, the front has height enough to carry fairly well in a town street.

Mr. Edgar Wood's Scientist church at Manchester, England, which appears a trifle bizarre at first glance, in reality seems to illustrate certain well considered principles of design as applied to the less monumental buildings. The use of the round arch with deep reveal in plain concentric courses of brick as a foil to the plain stucco wall surfaces is most effective, and the roof treatment, in spite of the somewhat exaggerated lines, seems altogether satisfactory.

Interior effect will be found to be dependent upon good proportions and again the intelligent use of materials, however simple. No amount of elaboration will make a success of a badly proportioned building. Properly arranged lighting is most essential, and here the difficulty in most cases will be to avoid too much light, either natural or artificial. The "dim religious light" is not wholly a matter of sentiment, though it undoubtedly does add to the architectural effect and in larger buildings supplies that sense of mystery and unexplored spaces to which a church interior owes much of its charm. Nothing is more annoying and disturbing than a constant glare of strong light from thinly glazed windows or many unshaded lamps, at

Design for Episcopal
Church at Edgartown, Mass.
Cram, Wentworth & Goodhue
Architects

Exterior and Interior Views
of St. Elizabeth's Chapel, on Estate of
Ralph Adams Cram, Architect,
Sudbury, Mass.

times becoming positively painful; and nothing is more conducive to quiet rest and religious meditation than the subdued light of a properly designed church interior. It should not be the aim, in a church above all places, to hide poor workmanship by turning down the light, but plain wall surfaces and simple furnishings will often prove quite satisfactory and require less elaboration under proper lighting, which would not be adequate under the full glare of the sun or many high-powered electric lamps.

Plain chancel paneling, if well proportioned and of a good color, may often be nearly as effective as if elaborately carved. The altar, if there is one, may be of the simplest. It should not be too short, — a mistake often made. The frontal is required by the Ornaments Rubric of the Church of England, and if this practice is followed, any elaboration of the altar front is unnecessary. Velvet, damask, or other stuffs may be used for the dorsal. The high dorsal, sometimes with canopy or sort of baldachino which has of late come into vogue both in this country and in England, is at times most effective. It is, however, apparently contrary to the custom of the builders of old English churches, and the conservative practice seems to be to have the dorsal of a height above the altar somewhat less than that of the altar itself, either with or without the wings or riddels, and according to ancient practice, these should be at right angles to it.

If the scruples of the evangelical faith exclude a fixed altar, the communion table may be so designed as to stand against the wall of the chancel when not in use, and with a properly arranged motif in the paneling above, or a well placed hanging or dorsal, may be perfectly dignified and satisfactory. Obviously the clergyman's seat will be placed at one side, preferably against one of the side walls of the chancel.

The chancel is more effective if lighted from rather high windows at either or both sides, rather than by a large window over the altar, and the east window should be avoided unless it is assured that it may be filled with extremely good glass sufficiently heavy in design to avoid the otherwise unpleasant glare. Unless really good stained glass may be afforded, windows should be glazed with plain "cathedral" or other low toned, plain glass, as heavy as may be obtained, in slightly varying shades nearly colorless, and set in

heavy leads, usually arranged in simple rectangular or lozenge-shaped patterns.

A permanent and dignified effect will be obtained if the floor of the chancel, and if possible, at least the aisles of the nave, are of tile or brick. If heating apparatus can be placed under one end or under the vestry or parish house, the portion under the main part of the church need be excavated only sufficiently to give access to pipes.

Christian Science Church, Manchester, England
Edgar Wood, Architect

Chairs are in some ways more satisfactory than pews, and less expensive. As they are also much less comfortable, they are generally objected to by building committees.

A well designed reading desk or lectern may often be used temporarily to preach from instead of a pulpit. Choir stalls are difficult to manage when the appropriation is small, but may be perfectly satisfactory with simple paneled ends. Elaborately carved ends should be avoided unless they are skillfully designed, and no carving should be attempted unless it may be well done.

In the small churches and chapels which we have been considering, some difficulty will probably be experienced in the proper arrangement of the organ in the limited space available. If a small pipe organ is to be used, the pipes sometimes may be placed in the space above the ceiling of the sacristy or vestry, opening into the chancel over the choir seats, or an organ chamber may have to be built outside the chancel, on the opposite side from the vestry. Room for the manual and organist's seat may usually be found against the chancel wall by shortening one of the choir stalls. The small motor for blowing is best placed in the basement below, as it is difficult to eliminate all sound.

Lighting fixtures are perhaps more often a cause of failure on the part of the unskilled designer than any other one thing, and if left to the discretion of the building committee, may ruin a good building. There seems to be a feeling that to be ecclesiastical, they must be in some way rather weird and unusual. Hence every conceivable form of hammered, bent, twisted or curled tin, brass, copper or iron. The more extraordinary the invention, the more ecclesiastical. Imitation candles are most objectionable. In a country chapel, where the expense of wiring may be a burden, why not real candles? Simple and effective chandeliers or wall brackets may be designed and made of black iron or even of wood, at comparatively small expense. Small round, frosted bulbs are perfectly satisfactory, and not particularly trying to the eyes, if the design does not permit of their being shaded.

With the revival of interest in iron craftsmanship, hardware offers an obvious opportunity for indulgence in one of the minor requirements which go to complete the perfection of the whole, but in the present case the allowance for this is likely to be of the smallest. Quite satisfactory black, wrought iron strap hinges may now be obtained from a certain number of dealers, but if even these are too great an extravagance, one may have recourse to the plain and unobtrusive commercial "butts," finished a dull black, and if nothing better may be afforded, simple cast-iron thumb latches are always practical, and perhaps rather more appropriate than the modern round knob.

In the foregoing, an attempt has been made to show that success in church building is not necessarily directly in proportion to the funds available, but rather that it is dependent upon a certain familiarity with good precedent together with care and judgment in the use of materials and their adaptation to modern needs and present-day methods of construction.

Chapel of Sidney Sussex College, Cambridge, England

T. H. LYON, ARCHITECT, LONDON

OF the old colleges in the University of Cambridge, England, Sidney Sussex College and Queen's College are the only two which have found it necessary to build a new chapel during the last hundred years. An architect must feel something of the burden of a great responsibility when undertaking to add his quota to the architectural beauty of the old English Universities. Here, perhaps, more than anywhere else, he lays himself open to the blessings or the cursings of future generations.

The original chapel at Sidney Sussex College was perhaps the smallest in the University. It measured 20 by 30 feet, and with its flat ceiling, was scarcely more than a lofty room. However, even moderately old college buildings have a historical value; and fortunately it was possible to incorporate the shell of the old chapel with the new building. The chapel is now 90 feet in length.

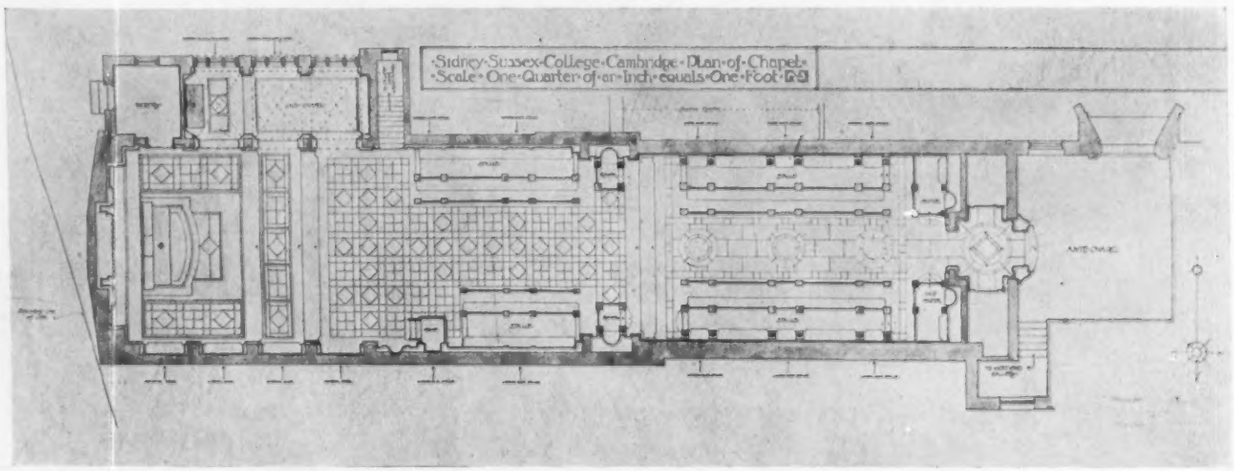
As (for proportional reasons) it was necessary to make the new portion wider than the old, it became necessary also to give a special treatment to the junction between these portions. This was accomplished by placing the Readers' stalls at this point, which is also a good position for them, both from the Readers' and the listeners' point of view.

Two steps lead from the old portion of the chapel to the new, and form, almost at the entrance, the beginning of a gradual ascent to the altar, an arrangement which adds very much to the dignity of the building.

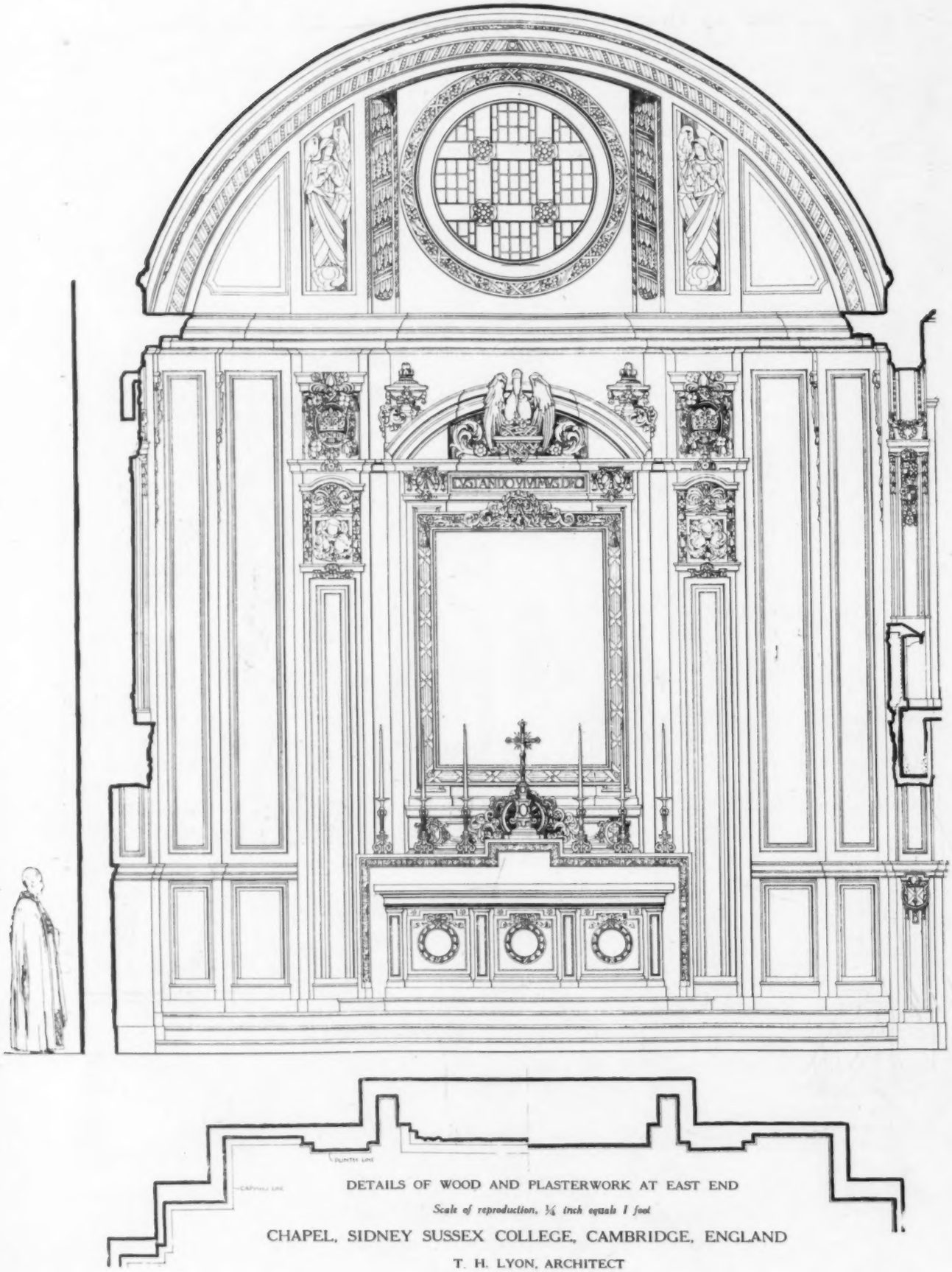
The floor is of marble, the colors used being soft gray, black, white and medium dark green; in addition two pieces of Arizona in front of the Readers' stalls, and one square of yellow Sienna in front of the altar give a touch of richness to a quiet color scheme.

The walls of the chapel are paneled in oak to the cornice, which is also in oak and 19 feet above the floor level. Over the sanctuary, decorative ceiling ribs, modeled in plaster, connect the oak pilasters forming the wall divisions. On these ribs interlaced with a ribbon band on which the words "*Laus Deo*" are modeled as a repeat, the following subjects are represented in a decorative manner: "The Angels of Men," "The Beasts of the Field," "The Sun, Moon and Stars," "The Fishes of the Sea," and the "Birds of the Air." On the oak pilasters immediately

Detail of Carving on Pilasters on Either Side of Altar



Ground Floor Plan of Sidney Sussex College Chapel



DETAILS OF WOOD AND PLASTERWORK AT EAST END

Scale of reproduction, ¼ inch equals 1 foot

CHAPEL, SIDNEY SUSSEX COLLEGE, CAMBRIDGE, ENGLAND

T. H. LYON, ARCHITECT

GENERAL VIEW LOOKING TOWARD EAST END

CHAPEL, SIDNEY SUSSEX COLLEGE, CAMBRIDGE, ENGLAND

T. H. LYON, ARCHITECT

under the cornice, there are carved bosses which, on the south side present the symbols of the five writers of the Epistles, and on the north side the four Evangelists, together with a representation of the angel carrying the Gospel into the world. Over the arches which divide the sanctuary from the Lady Chapel there are four circular subject panels, representing "The Feeding of the Children of Israel with Manna in the Wilderness," "Our Lord Feeding the Five Thousand," "Moses Striking the Rock" and "The Soldiers Piercing Our Lord's Side." On the north side the inner divisions contain each a window, one in honor of the Passion, and the other of the Sacrament of the Altar. The divisions on either side of these windows are arranged as memorial panels, one in memory of the benefactors of the College, and the other of all Sidney Sussex men who have departed this life. These panels are surmounted by the college arms and the inscriptions are in Latin, carved in low relief.

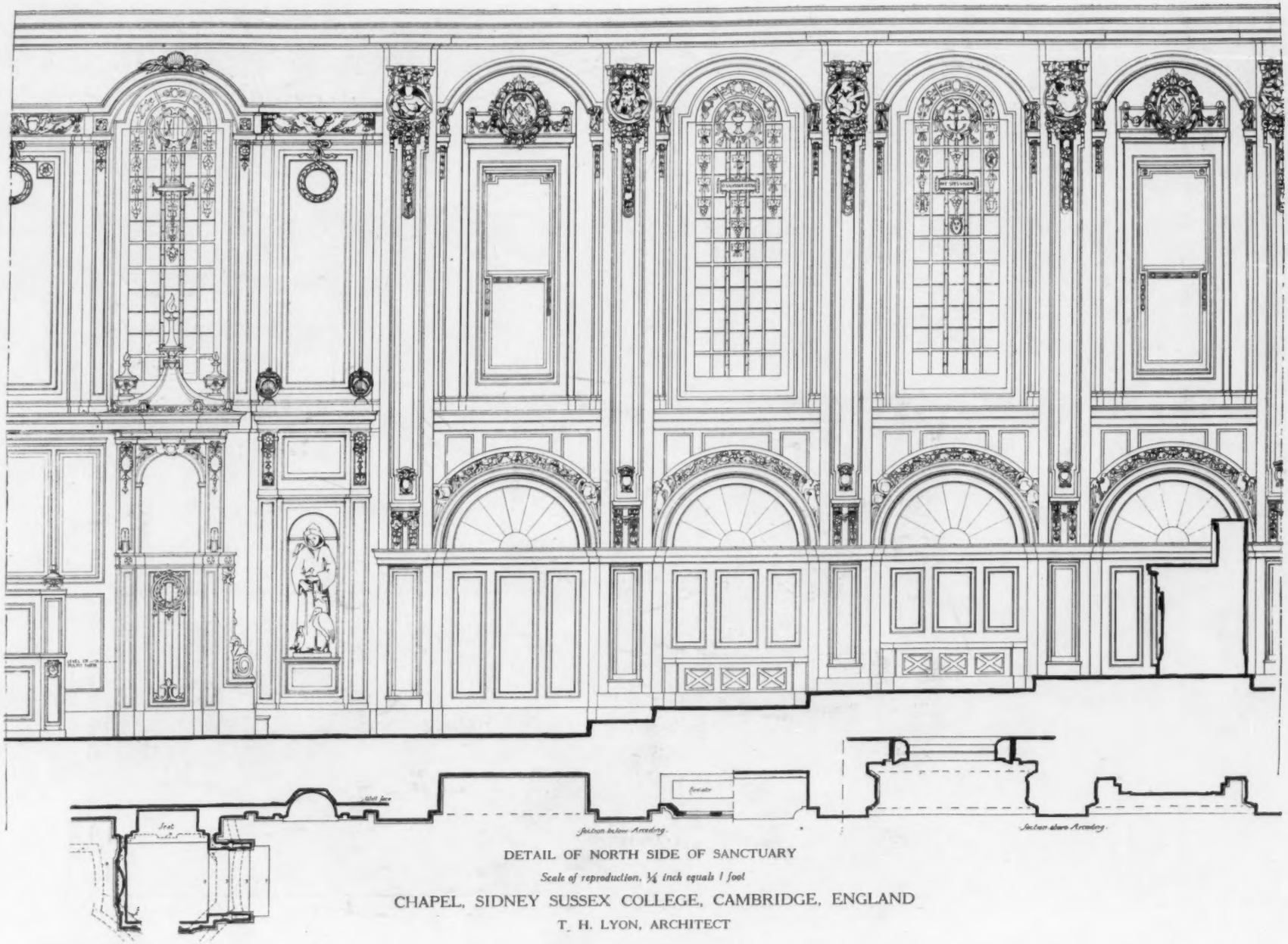
The altar and the retable are of marble and bronze; the bronze wreaths enclosing yellow Sienna of a beautiful rich tone. It was designed to form the altar slab of Belgian black marble, but as it became impossible to obtain a piece of sufficient size, owing to the war, a dark gray Devonshire marble was used for this purpose. The cross and candlesticks on the altar are temporary and they will be replaced after the war by others in scale with their surroundings. The retable stands five feet from the east end wall, an arrangement which gives a sense of spaciousness to the sanctuary and adds dignity to the altar. A picture brought from Italy and said to be a copy of a Rubens, which formed part of the reredos in the old chapel, has been incorporated in the oak paneling at the east end of the new building.

View in Chapel Looking Toward Lady Chapel and Visitors' Gallery Above

There is a gallery for visitors over the Lady Chapel on the south side of the sanctuary, which is approached through a doorway from the main portion of the chapel. The Lady Chapel has a vaulted ceiling; and on the oak paneling to the piers, symbols of Our Lady are carved in low relief. On the east end wall there is a circular panel of the Madonna and Child, executed in plaster and colored.

The windows in the main portion of the chapel display the armorial bearings of the college benefactors. These heraldic devices and the ornamental swags which surround them are set as architectural design in uncolored glass. By this treatment the windows have become pre-eminently factors in the whole architectural effect, and are not merely a series of glass pictures such as would be equally suitable to almost any type of building.

The chapel was begun in 1912 and it is now completed from the east end to the division between the old portion and the new. The old portion of the chapel when completed will contain the Fellows' stalls, the west end gallery; and possibly also war memorials, for which two niches have been arranged on the south side where there are no windows corresponding to those in the opposite wall.



DETAIL OF NORTH SIDE OF SANCTUARY

Scale of reproduction, ¼ inch equals 1 foot

CHAPEL, SIDNEY SUSSEX COLLEGE, CAMBRIDGE, ENGLAND

T. H. LYON, ARCHITECT

The somewhat traditional method of finishing the west end by placing the organ case over the gallery has not been followed. Paneling, similar in character to that on the side walls, will form a screen across from wall to wall, leaving an opening flanked by columns in the center which will offer an attractive view looking up the chapel. The organ will be placed behind the screen on one side; the acoustic properties of the building being such as make quite a small organ effective. A special feature of the west end will be the Master's and Vice-master's stalls, which will have domed tops supported on columns and backed by long vertical panels ending in pediments and carved work.

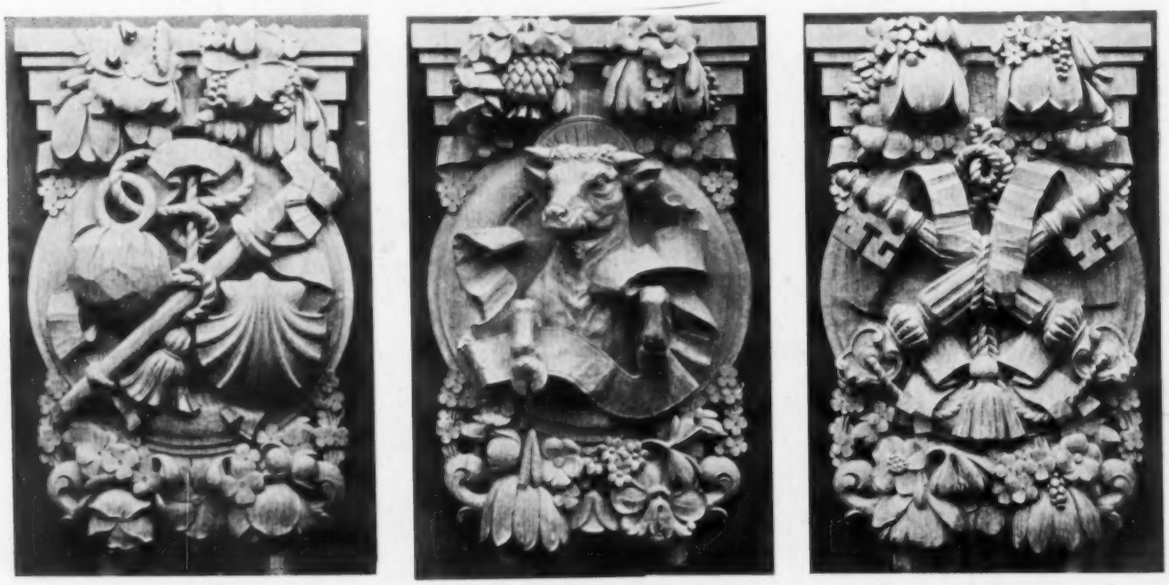
A word is necessary as to the character of the carving. It represents an adaptation to oak of a type of carving which lends itself in its most decorative form only to soft woods, such as pear. The aim was to utilize this type of carving so that it would become part of the architecture itself rather than applied decoration; and at the same time to make it serve as a higher tone of " architectural color," in a scheme where delicate fillets and sinkings present the quieter tones. Obviously, the " cut," which that clean, continuous sweep of the carving tool forms, and which gives so much life to the work of Gibbons, the " cut " without which all carving in soft wood becomes flabby in appearance, could not be obtained in oak. But the carving could be so managed that the tool found that clear way out at every point, which is characteristic of Gibbon's work, and contributes greatly to breadth of surface and definition in cutting.

When carving is to be used as " architectural color form " rather than as applied decoration, it is particularly necessary to study carefully the planes with a view to the effect they will produce as gradations between high light and deep shadow. Models in plaster were made as far as expenditure in money would allow. In the case of repetition work, such as the bosses to the pilasters in the sanctuary, one model served as a guide to the carver, which, as regards the planes, he was instructed to follow absolutely, but with full liberty to vary detail at his will.

An overcrowded effect is one of the principal dangers to be avoided in carving where the motive is floral and somewhat naturalistic. The principle adopted in the work under notice was that it was easier to cut out than to add; and the one man, who did all the carving with the exception of four circular panels, showed exemplary patience when the " cutting out " process was ruthlessly applied to his work.

The total cost of the chapel when completed will be $60,000.

As has been stated, the work was begun in 1912; and in these days of hurry and impatience, it is rare indeed that one is allowed as much time for thought and study and careful execution, as was accorded to their architect by the Master and Fellows of Sidney Sussex College. The work on the chapel will be continued as soon after peace is declared as possible. Many Sidney men who took the keenest interest in its development lie under the battlefields of France. One of these, before leaving his college never to return, made a visit to the chapel his last act.



Details of Carving Representing Symbols of the Evangelists and Writers of the Epistles, on the Pilasters at Either Side of the Sanctuary

DETAIL VIEW OF SANCTUARY

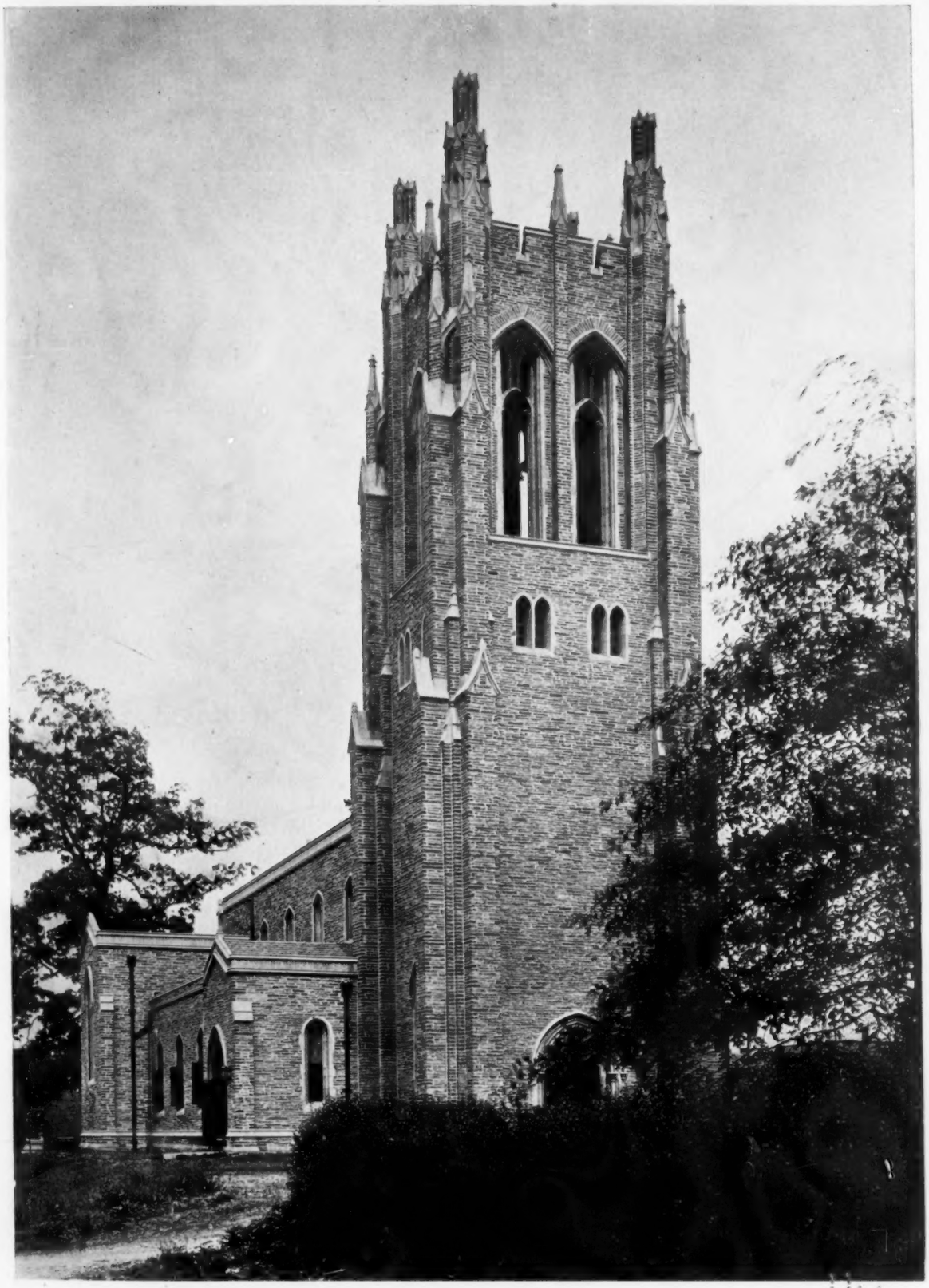
CHAPEL, SIDNEY SUSSEX COLLEGE, CAMBRIDGE, ENGLAND

T. H. LYON, ARCHITECT

DETAIL OF STALLS AND READER'S DESK

CHAPEL, SIDNEY SUSSEX COLLEGE, CAMBRIDGE, ENGLAND

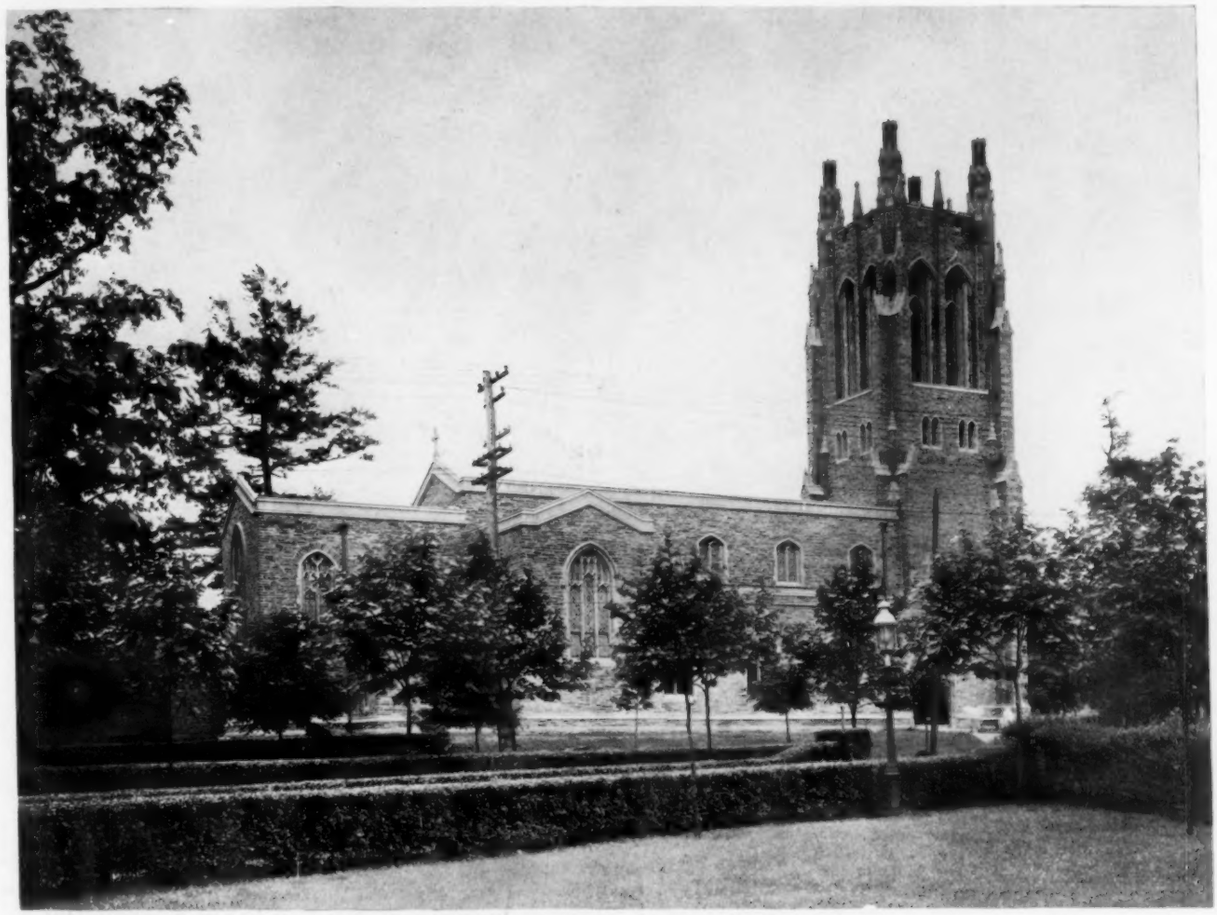
T. H. LYON, ARCHITECT



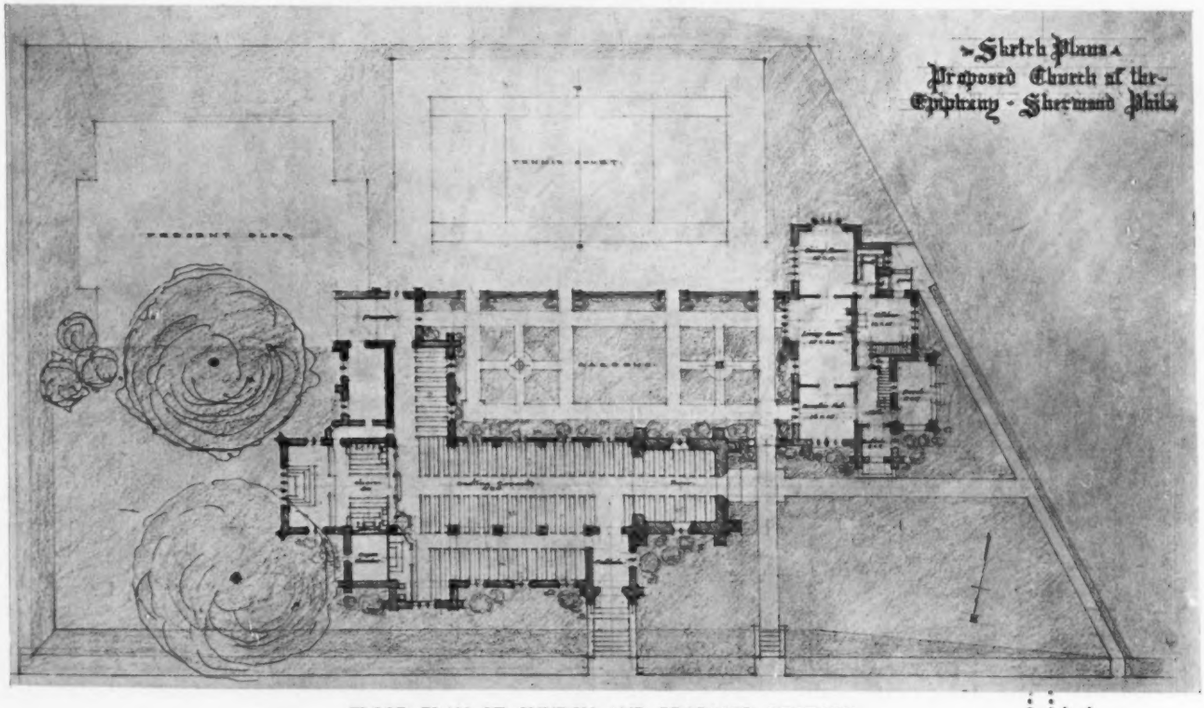
DETAIL OF TOWER

CHURCH OF THE EPIPHANY, SHERWOOD, WEST PHILADELPHIA, PA.

DAY & KLAUDER, ARCHITECTS; E. E. HENDRICKSON, ASSOCIATE



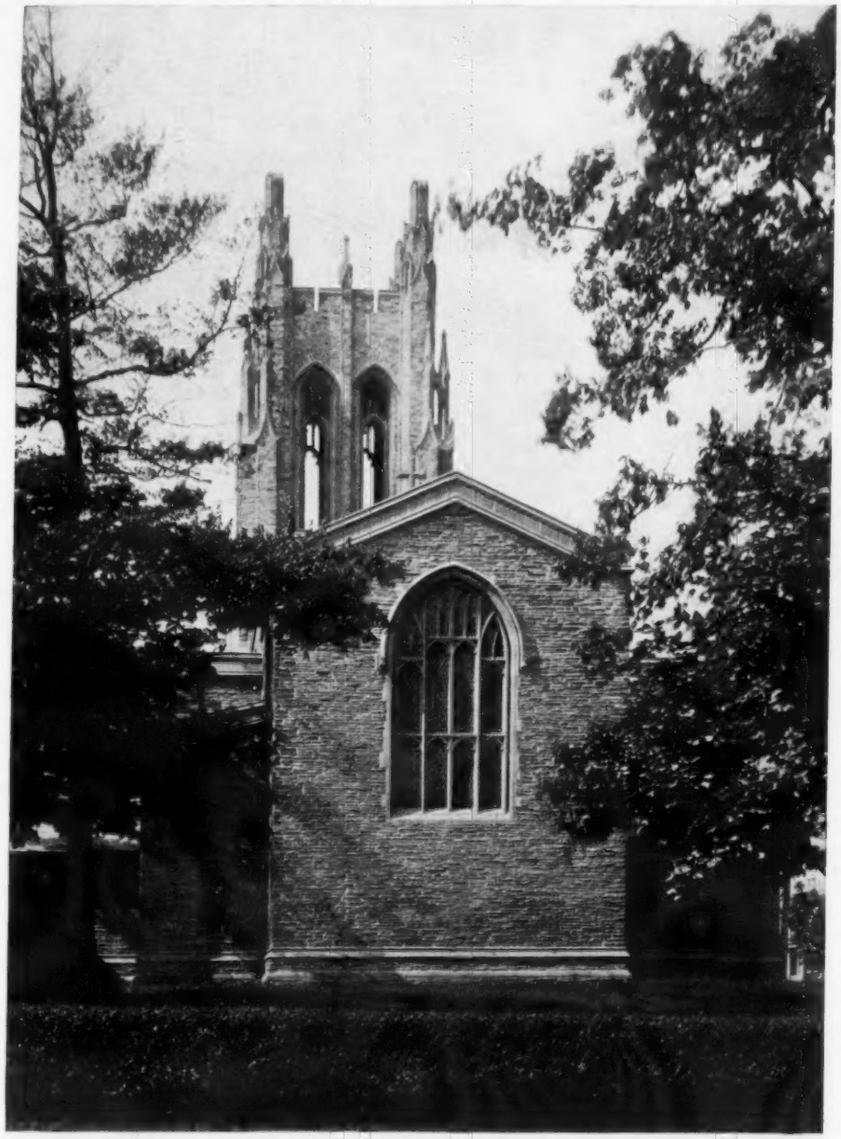
GENERAL VIEW FROM THE NORTH



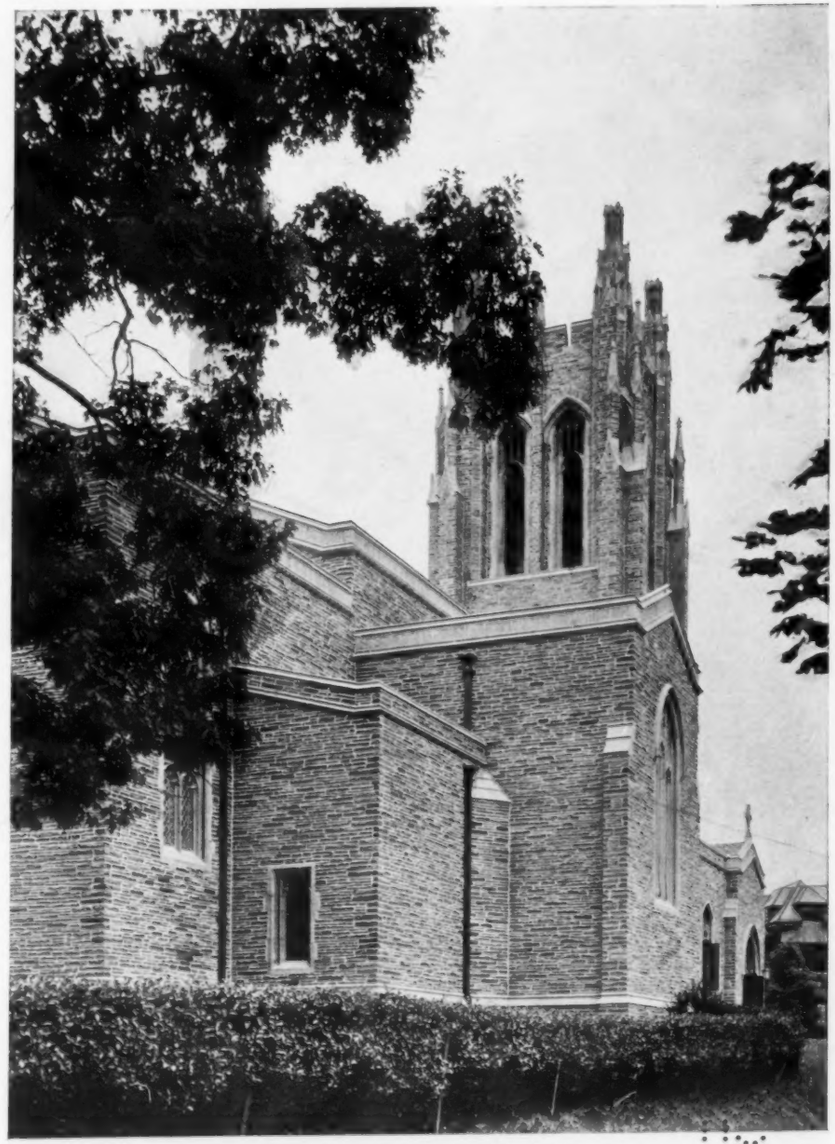
FLOOR PLAN OF CHURCH AND PROPOSED RECTORY

CHURCH OF THE EPIPHANY, SHERWOOD, WEST PHILADELPHIA, PA.

DAY & KLAUDER, ARCHITECTS; E. E. HENDRICKSON, ASSOCIATE



VIEW OF CHANCEL END



VIEW SHOWING NORTH TRANSEPT

CHURCH OF THE EPIPHANY, SHERWOOD, WEST PHILADELPHIA, PA.

DAY & KLAUDER, ARCHITECTS; E. E. HENDRICKSON, ASSOCIATE

DETAIL OF SIDE ALTAR AND PULPIT

VIEW FROM SIDE AISLE TOWARD CHANCEL

CHURCH OF THE EPIPHANY, SHERWOOD, WEST PHILADELPHIA, PA.

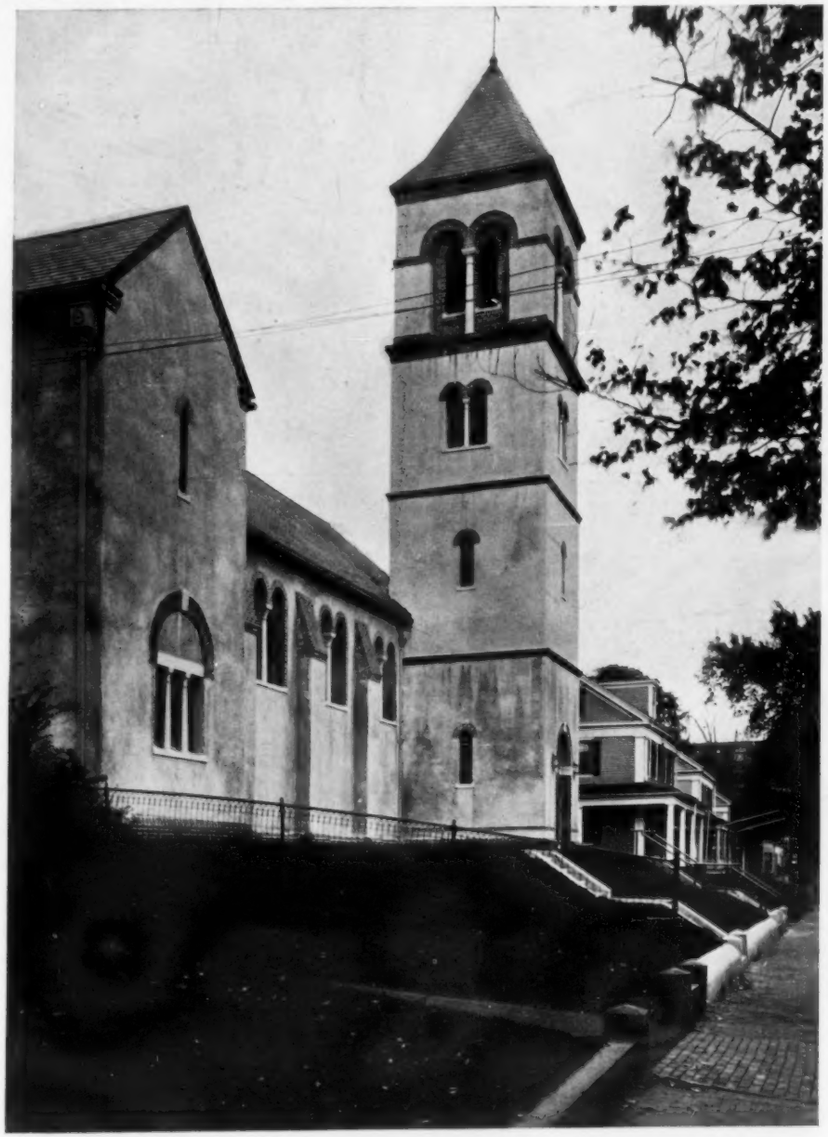
DAY & KLAUDER, ARCHITECTS: E. E. HENDRICKSON, ASSOCIATE

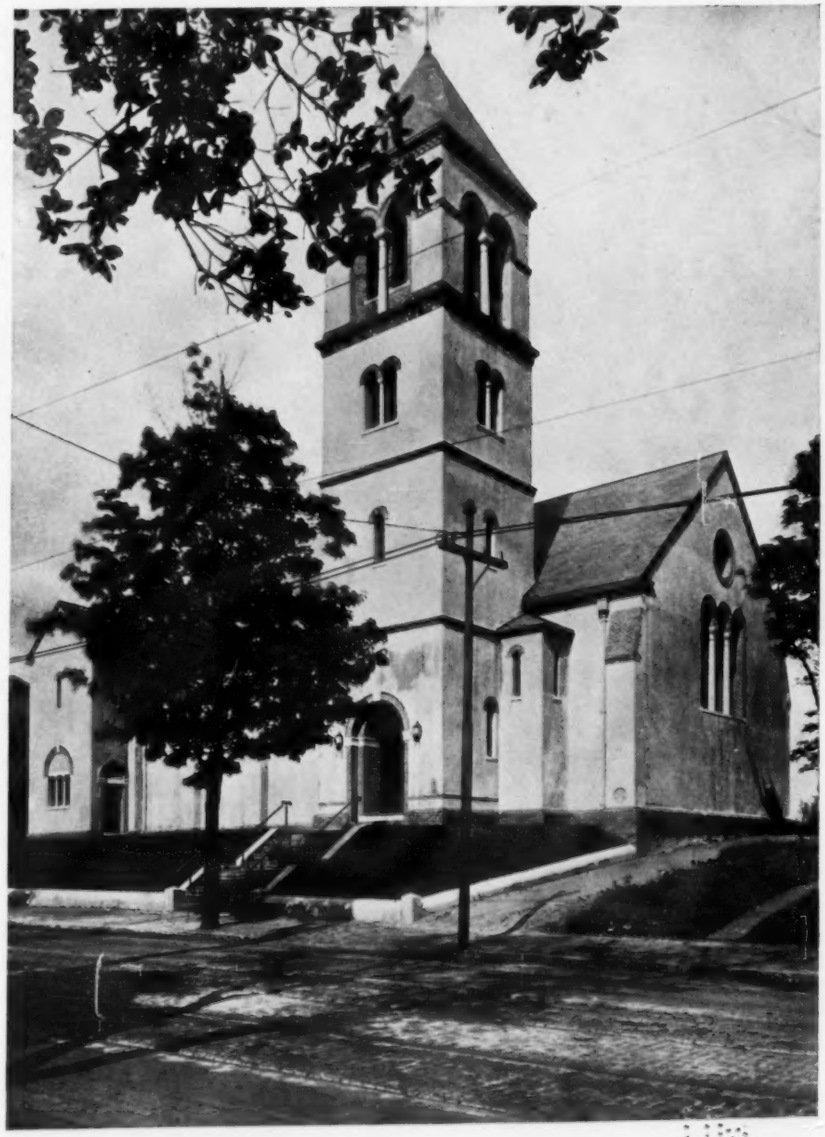
Photo Copyright by Jos. N. Pearce

DETAIL VIEW OF CHANCEL

CHURCH OF THE EPIPHANY, SHERWOOD, WEST PHILADELPHIA, PA.

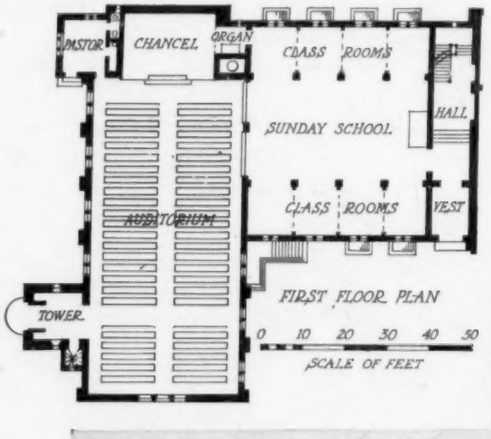
DAY & KLAUDER, ARCHITECTS. E. E. HENDRICKSON, ASSOCIATE

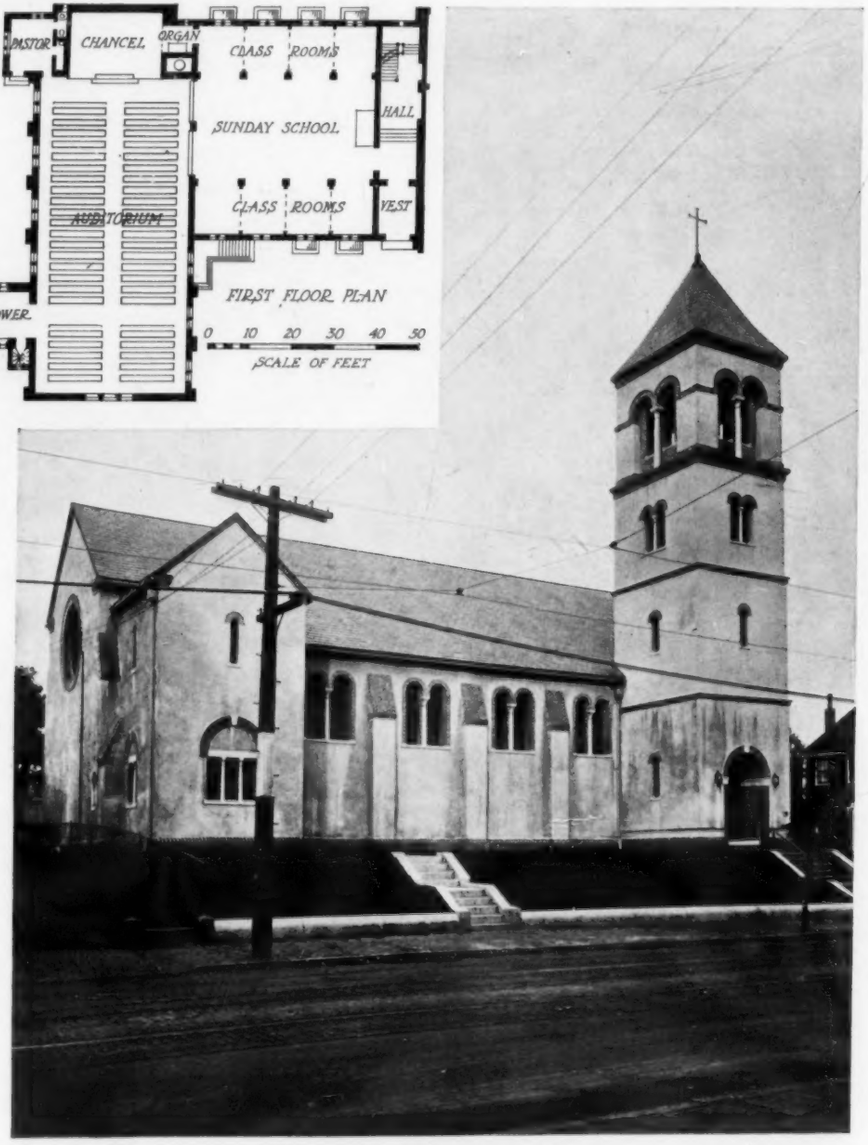




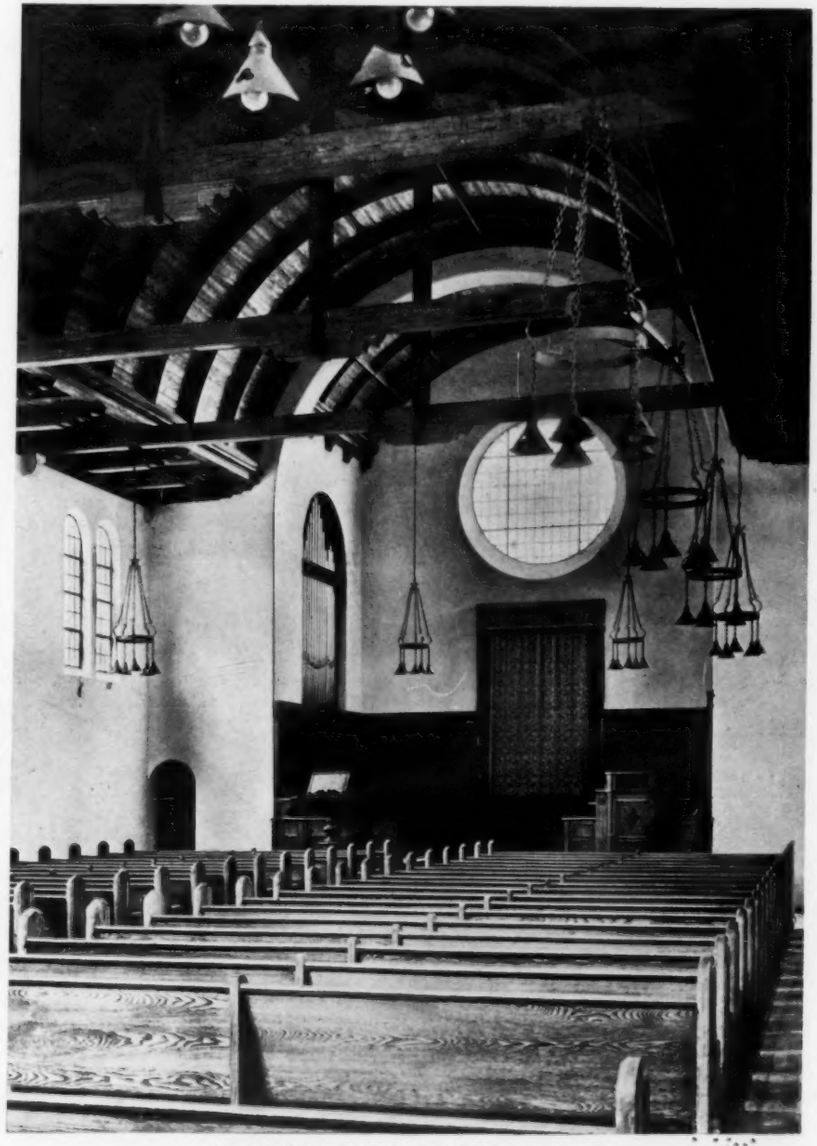
FIRST UNIVERSALIST CHURCH, SOMERVILLE, MASS.

CRAM & FERGUSON, ARCHITECTS





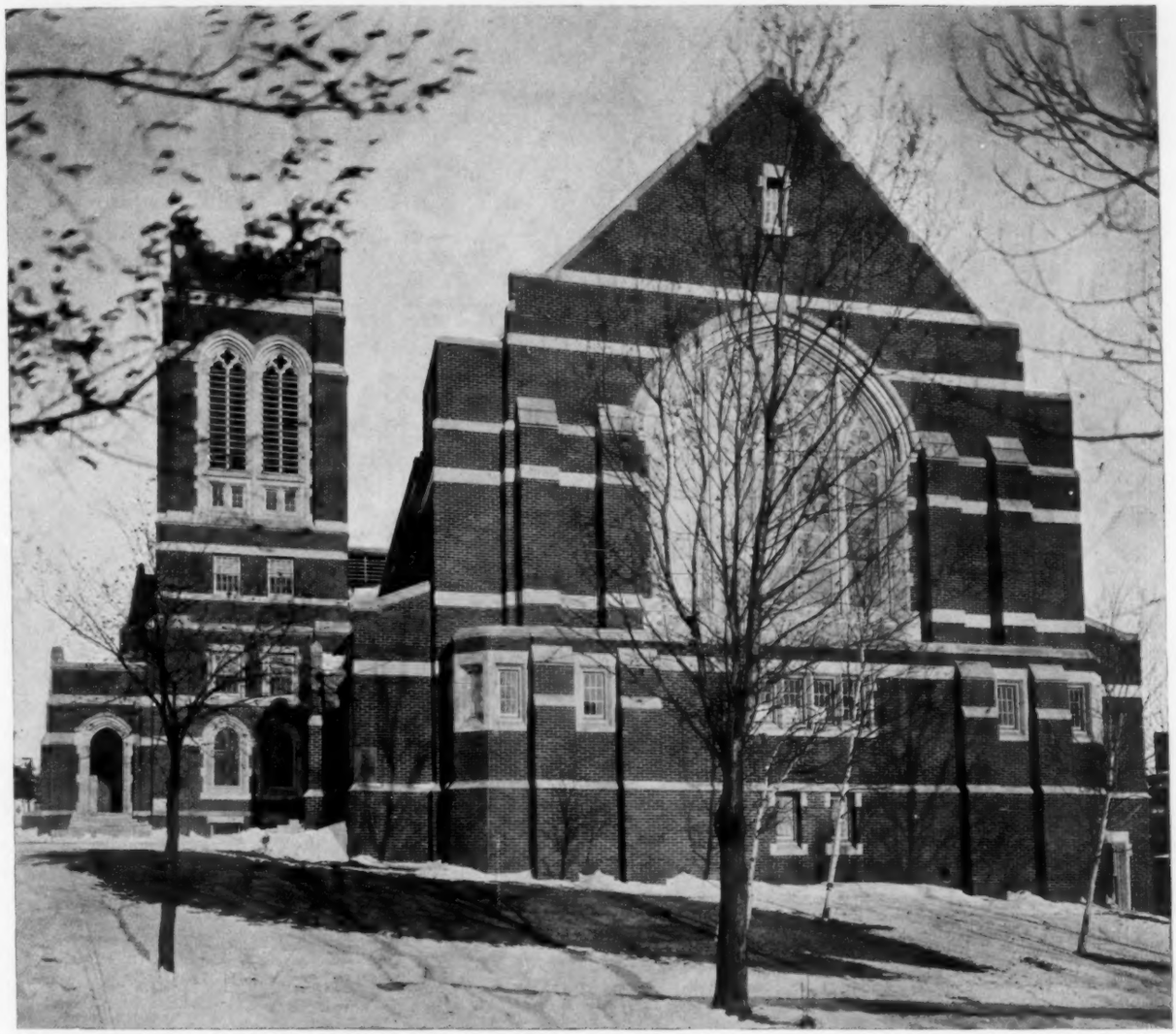
GENERAL VIEW OF EXTERIOR

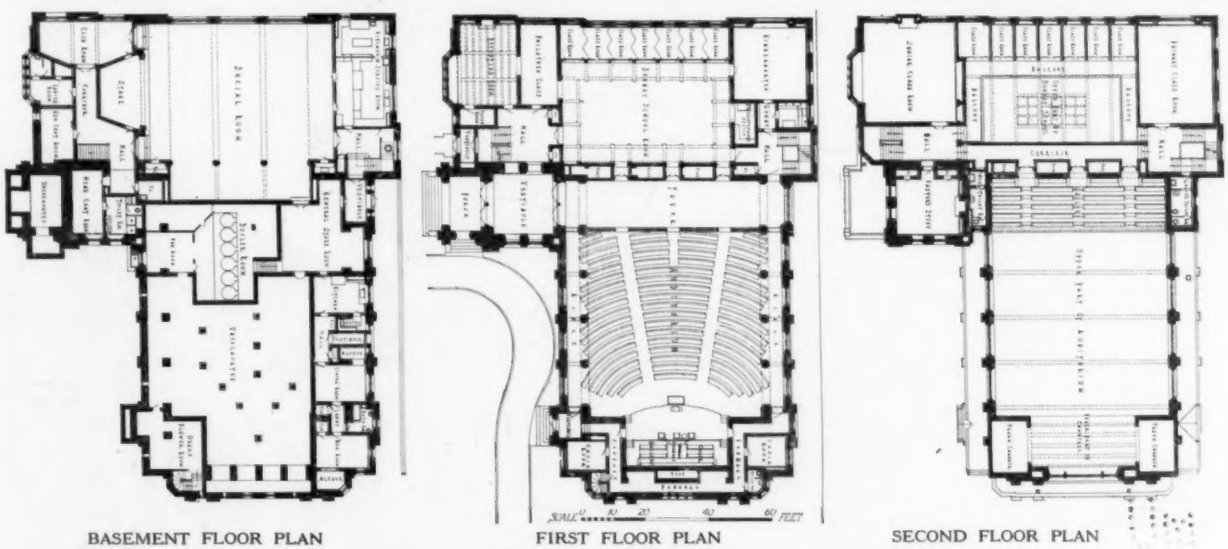


AUDITORIUM, LOOKING TOWARD CHANCEL.

FIRST UNIVERSALIST CHURCH, SOMERVILLE, MASS.

CRAM & FERGUSON, ARCHITECTS

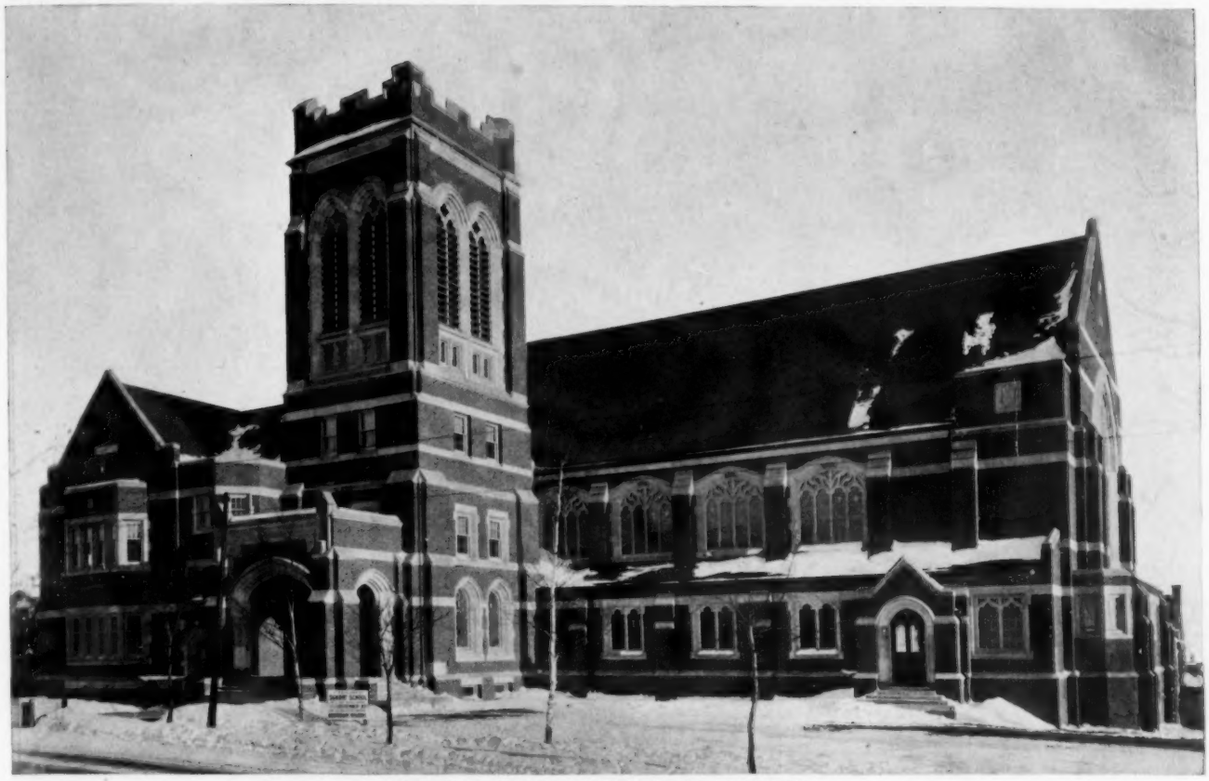




BASEMENT FLOOR PLAN FIRST FLOOR PLAN SECOND FLOOR PLAN

PILGRIM CONGREGATIONAL CHURCH, DULUTH, MINN.

GERMAN & JENSSEN, ARCHITECTS



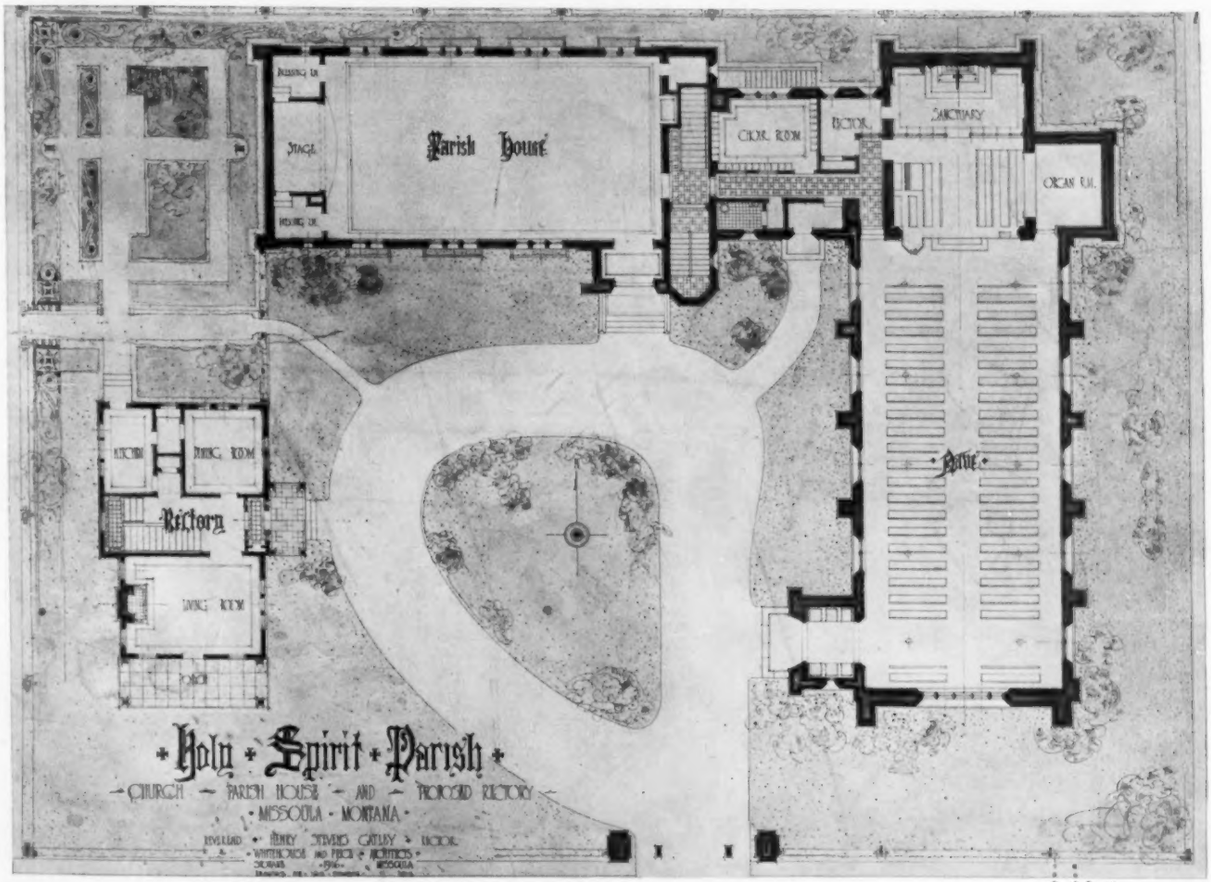
GENERAL VIEW SHOWING MAIN ENTRANCE

INTERIOR CF AUDITORIUM LOOKING TOWARD GALLERY

PILGRIM CONGREGATIONAL CHURCH, DULUTH, MINN.

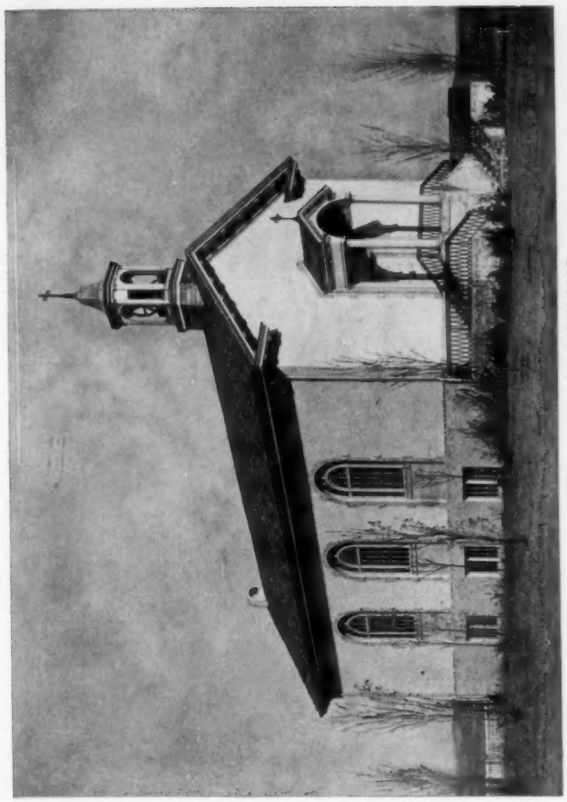
GERMAN & JENSSEN, ARCHITECTS

GENERAL VIEW OF EXTERIOR

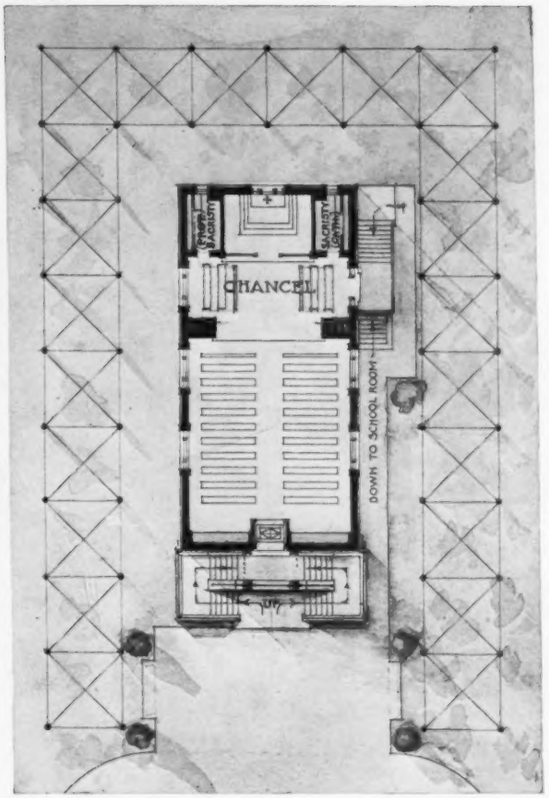


HOLY SPIRIT CHURCH AND PARISH HOUSE, MISSOULA, MONTANA

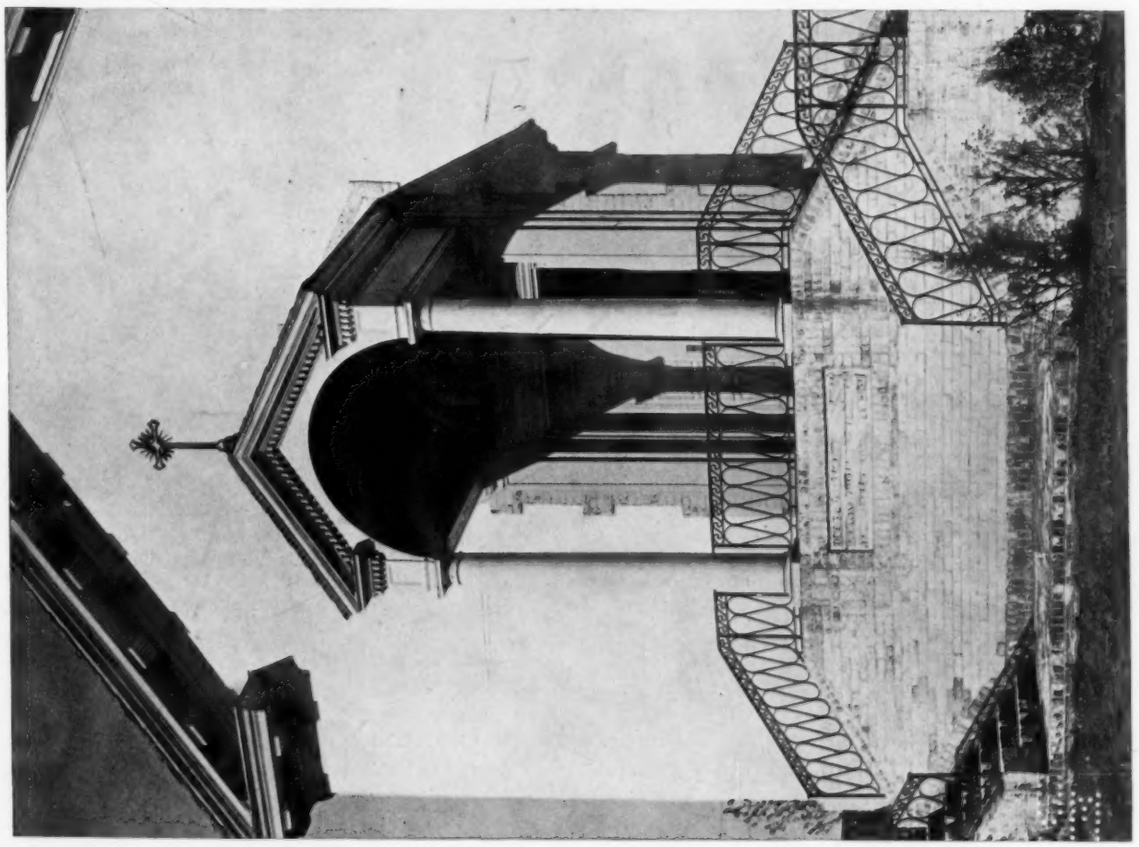
WHITEHOUSE & PRICE, ARCHITECTS



GENERAL VIEW OF EXTERIOR



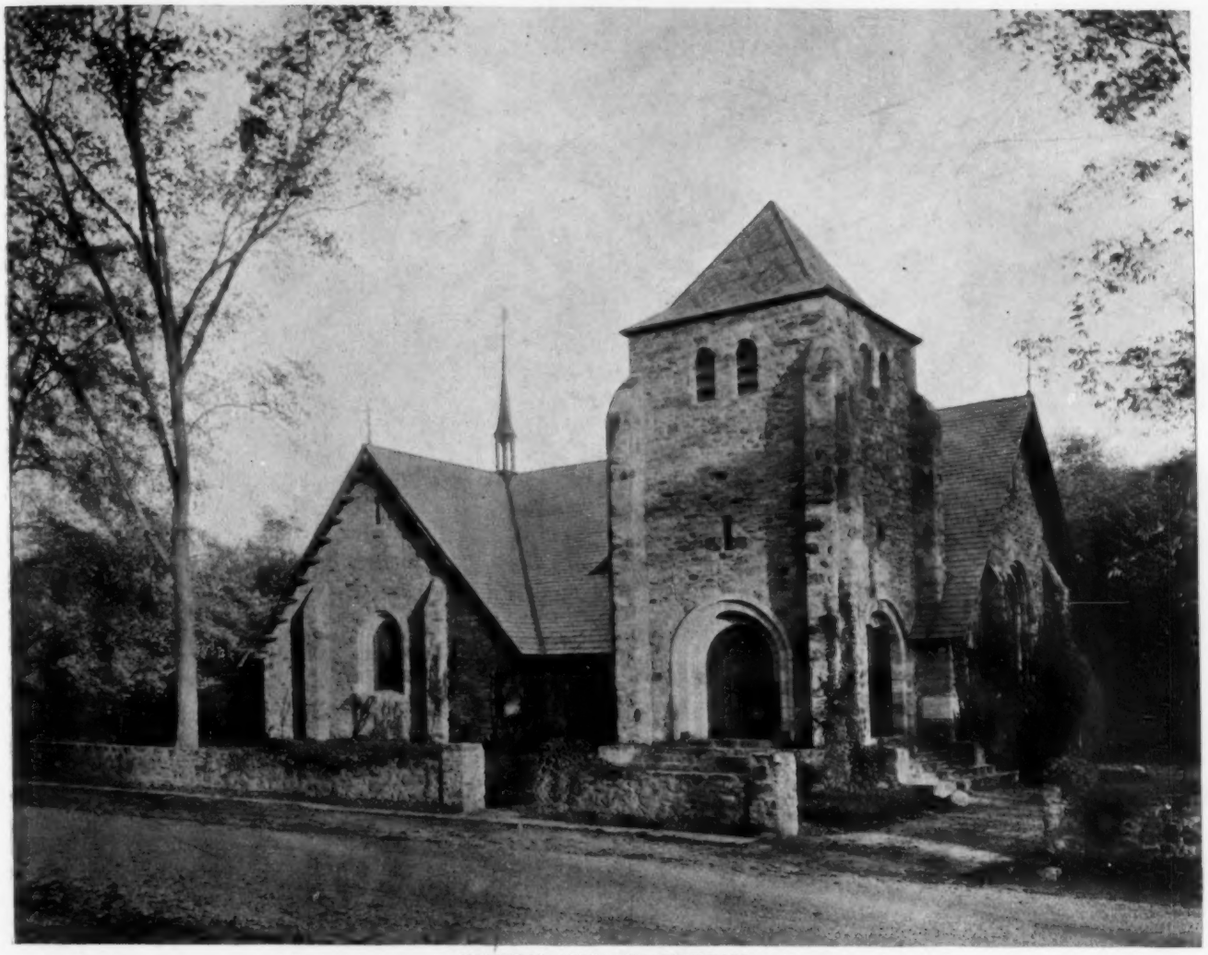
FIRST FLOOR PLAN



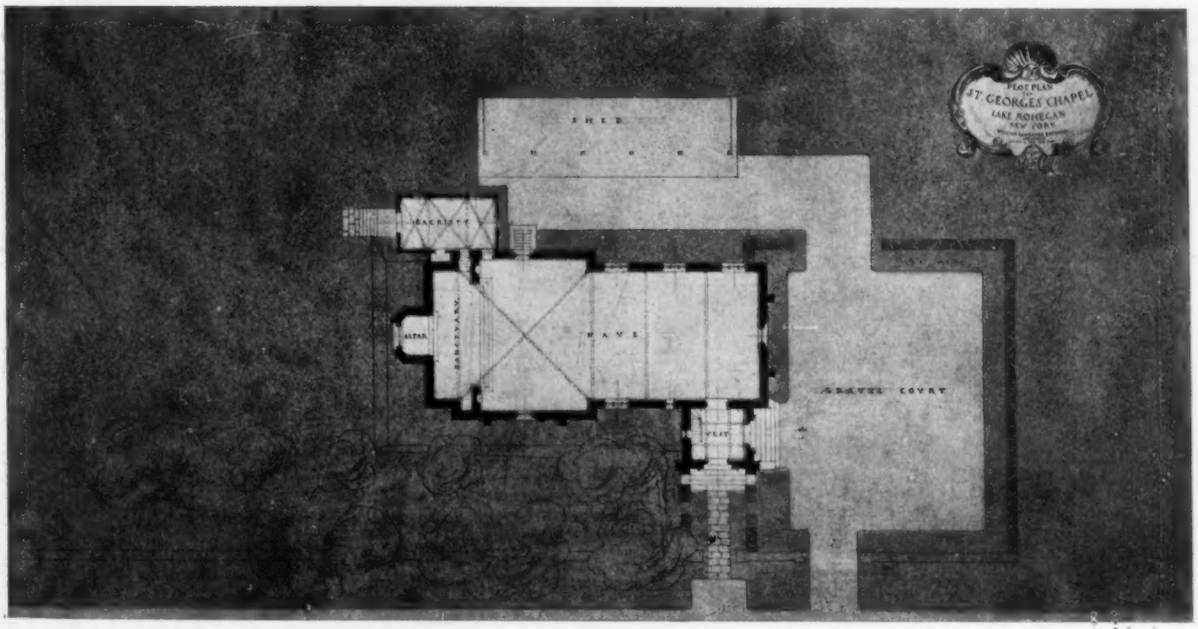
DETAIL OF ENTRANCE PORCH

CHAPEL, CLINTON FARMS, CLINTON, N. J.

DELANO & ALDRICH, ARCHITECTS

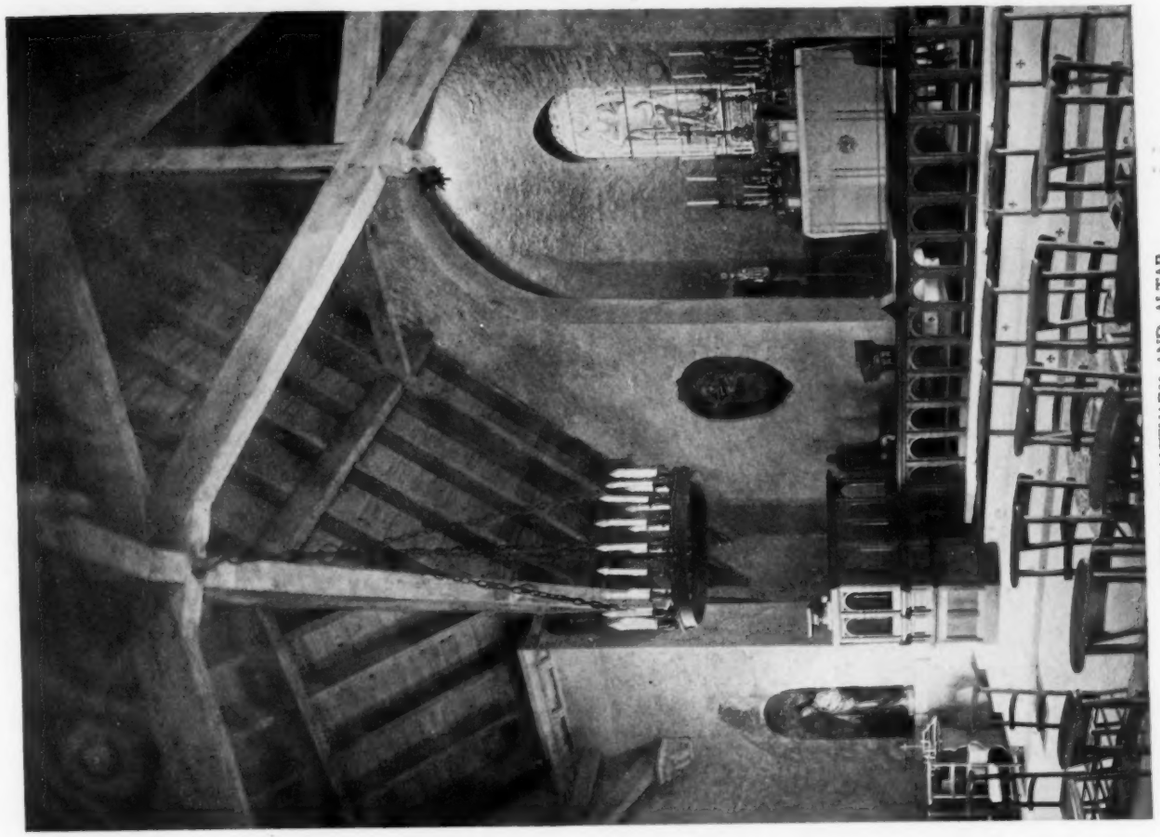


GENERAL VIEW OF EXTERIOR

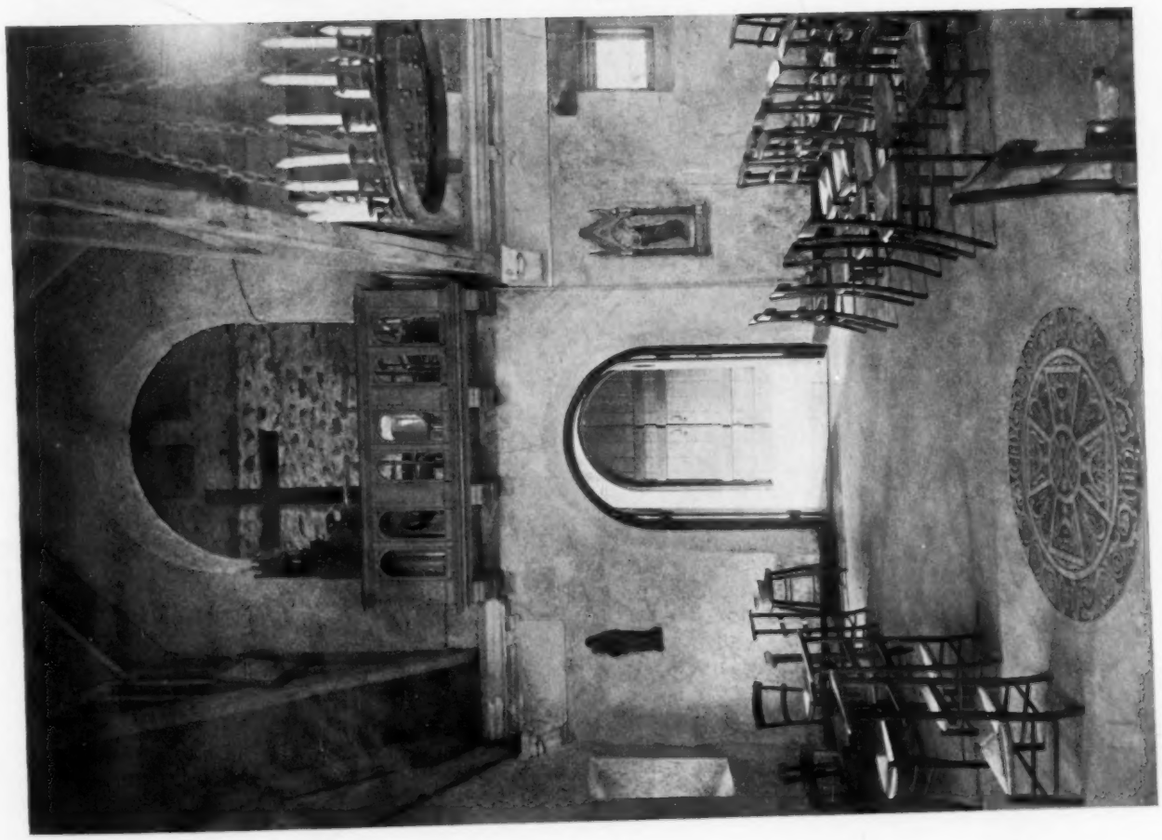


ST. GEORGE'S ROMAN CATHOLIC CHAPEL, LAKE MOHEGAN, N. Y.

WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT



VIEW OF SANCTUARY AND ALTAR



VIEW LOOKING TOWARD ENTRANCE

ST. GEORGE'S ROMAN CATHOLIC CHAPEL, LAKE MOHEGAN, N. Y.

WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT

THE "ALTAR OF LIBERTY," MADISON SQUARE, NEW YORK, N. Y.
ERECTED IN CONNECTION WITH THE FOURTH LIBERTY LOAN CAMPAIGN
THOMAS HASTINGS, ARCHITECT

St. George's Chapel, Lake Mohegan, New York

WILLIAM LAWRENCE BOTTOMLEY, ARCHITECT

By HAROLD DONALDSON EBERLEIN

ST. GEORGE'S CHAPEL is essentially a memorial church built in memory of George Lewis Heins, the architect, and also contains many memorials to John La Farge, the artist, and to former members of his family. It was designed by William Lawrence Bottomley, while a member of the firm of Hewitt & Bottomley.

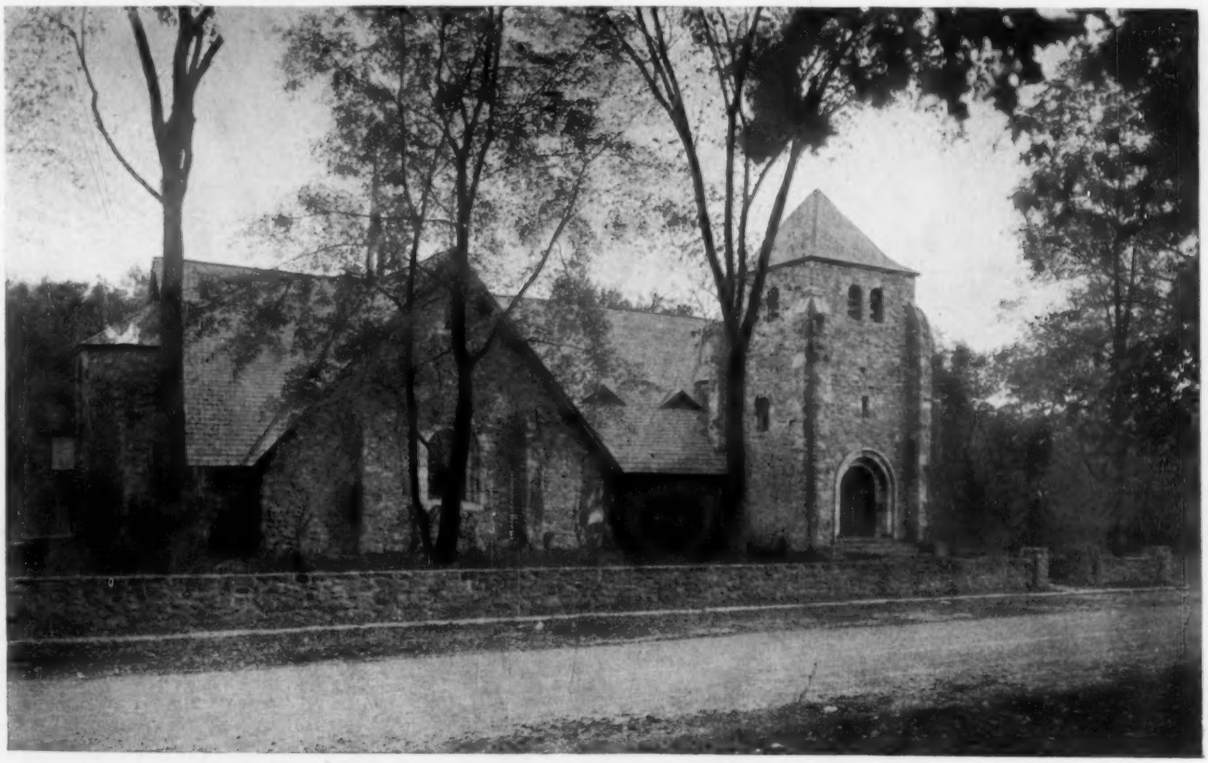
The building is not English, nor French, nor Italian, and yet it is somewhat of each in a felicitous way. More than all else, it is an indigenous growth and fits convincingly *into* its surroundings because it is *of* them. First of all, let us rehearse its physical characteristics and history, reserving critical comment and judgment until afterward.

The fabric of St. George's Chapel presents an eminently sane use of native building materials, literally gathered together upon the spot and turned to telling account. That is one reason why the work rings true. Westchester County, in the neighborhood of Lake Mohegan, is plentifully strewn with a deposit of glacial granite boulders. It was the local custom from time out of mind, in clearing the fields, to gather up these boulders and make boundary walls of them instead of using post and rail fences. St. George's Chapel is built of the stone taken from a number of these old walls.

These seam-faced granite stones, many of them weathered and moss grown, were disturbed as little as possible by dressing or other manipulation. Moss and lichen growths were let alone and, just as chance brought them, the stones were incorporated in the rubble walls, great care being taken to lay them on a flat bed according to strata. The pointing is flush and the only stones cut and fully dressed are those surrounding the doors and windows. This random use of different colors and sizes resulted in a thoroughly agreeable texture of mellow tone.

The roof is of gray green Vermont slates, laid in graduated widths ranging from twelve inches in the courses at the eaves to six inches in those at the ridge. On the roof of the tower, the diamond pattern, derived from an old French design, is wrought in black slates.

Theoretically, the plan of the chapel is cruciform. As a matter of fact, however, the transepts are so wide and so shallow that the structure is virtually all nave, save only for the exterior effect of the roof contour and the added interior space and loftiness.



General View from Roadway
St. George's Roman Catholic Chapel, Lake Mohegan, New York

Within, the girders are of yellow pine, the rafters are of spruce and the boarding of the roof is of fir. All the timbers of the roof and all the boarding are stained a warm gray with distemper paint, a treatment that has this double advantage — it brings out and emphasizes all the quality of the wood grain and, in the second place, it greatly helps the light. The carved pine cone drops or pendants hanging from the junctions of the king posts with the timbers of the scissors trussing are painted in dulled blues, greens and reds with occasional touches of gilding in the mediæval manner.

Painted Wooden Cartouche of St. Peter

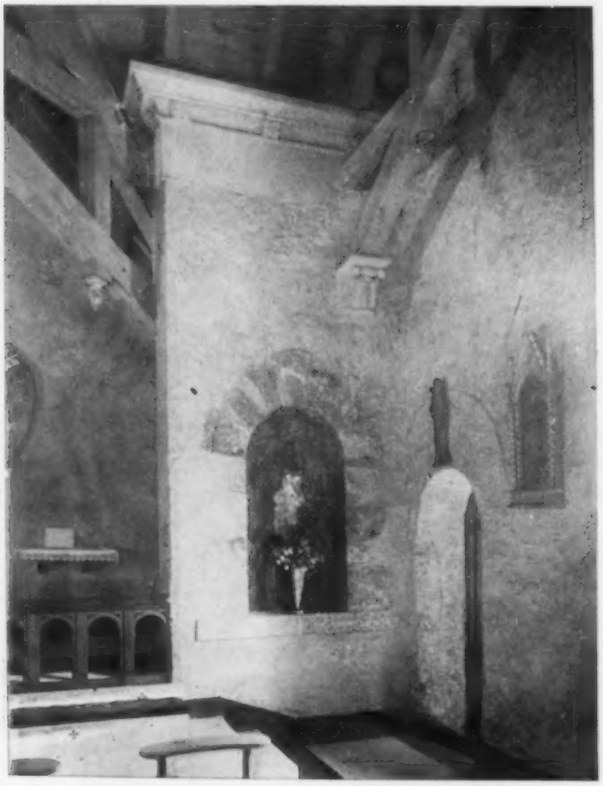
Of the same stone as outside, the interior walls are flush pointed or drag-dashed, thus producing a texture rough and irregular but somewhat smoother than the exterior surface. The cornice is of cast cement and the Romanesque-patterned corbels are of bastard granite, carved *in situ* by the Italian workmen. In the apse, the walls were first covered with a coat of waterproof paint and then gilded. Elsewhere it was felt that the spottiness and diversity of color in the stone was a bit disturbing and so an agreeable uniformity was secured by giving cornice, corbels, and walls a wash of light gray distemper paint, quite covering all the stonework with the exception of the arch stones above the niches.

The irregularity of the wall texture prevents monotony and the luminosity of the interior is largely attributable to the reflective quality of the light gray wash. This is important because the building gives the impression of being exceptionally well lighted, although the proportion of window space is apparently small and the windows at the sides, just below the eaves, are not large.

The floor is of gray composition and is embellished with medallions of black and white marble mosaic. Black marble tiles define the angle between the floor and walls. Leaded glass of a pale bluish green tinge, and almost transparent, fills the windows in the sides of the chapel and in the transepts, while the east and west memorial windows are filled with leaded glass.

The most important part of the simple decoration employed is the work of John La Farge. The large west window of leaded stained glass representing an architectural frame of the Italian Renaissance, originally exhibited at the Paris Salon, is his work, which after his death was converted into a memorial to the artist's parents. The oil painting which hangs above it, a panel of three saints' heads, is also by him, and is dedicated to his memory. The brilliant St. George window over the altar is after a sketch by Mr. La Farge. Also of interest is a small jewelled glass panel inserted in one of the windows, in which are used amethysts and topazes, one of the earliest specimens of the glass introduced by him over thirty-five years ago, and since then so universally copied.

The west window was also designed by him. These windows and paintings, the gilded wall of the apse, and the two painted wooden cartouches, of St. Peter and St. Paul, supply the necessary interest of strong color to relieve an interior that might otherwise prove somewhat austere. The rush-bottomed chairs and kneelers, finished in the natural wood, were brought from France and are of a pattern commonly found in French churches. The extreme length of the chapel, including the apse, is one hundred and twenty-five feet; the width is thirty feet.

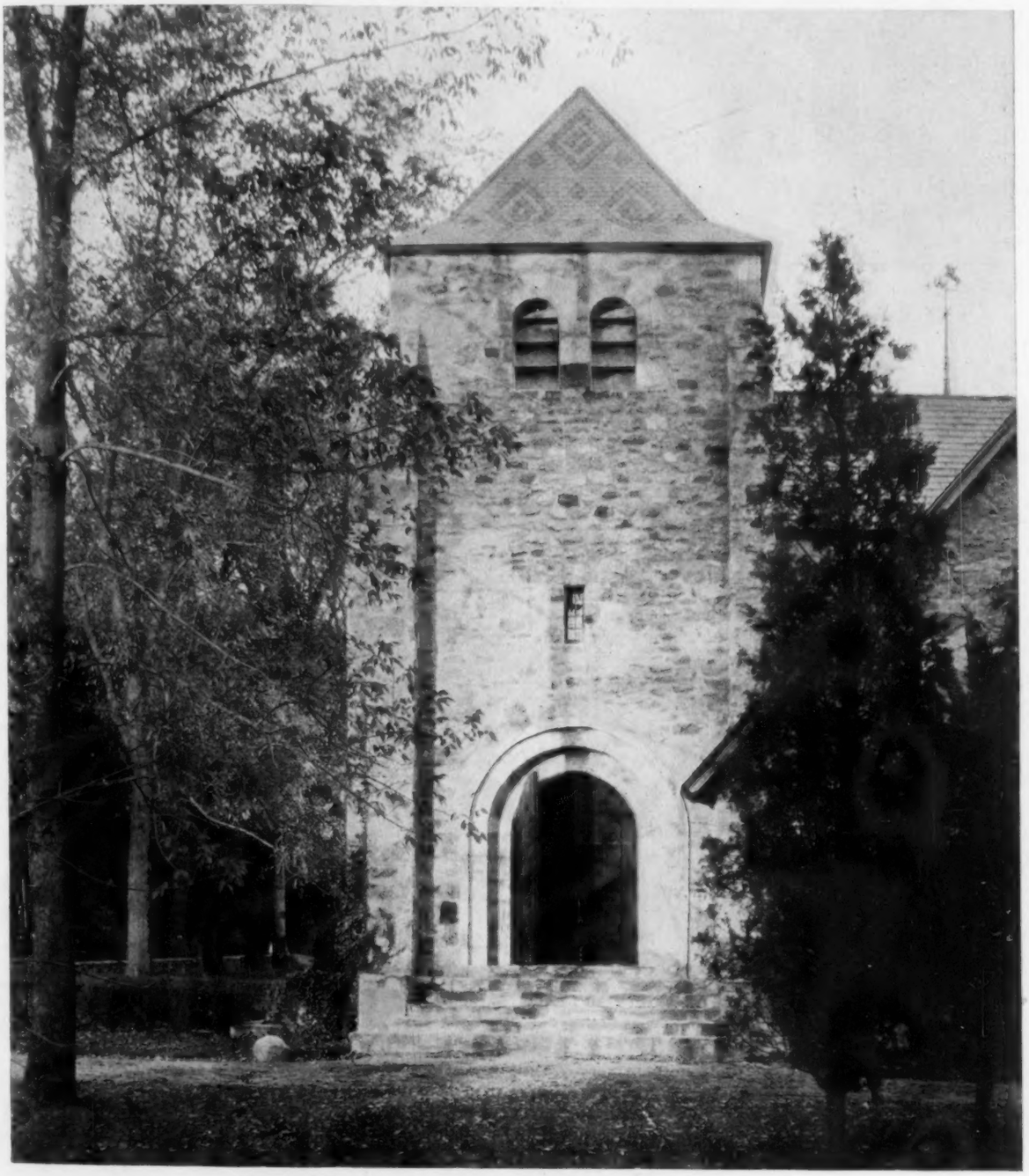


Detail at Side of Sanctuary Showing Door to Sacristy

St. George's Chapel is, it is true, reminiscent of

Description of Churches in the Plates

French, of Italian, and, to some degree of English, ecclesiastical prototypes, as the illustrations indicate. It is not, however, the embodiment of a mere bit of clever archæology or of archæological adaptation. It defies any attempt to pigeonhole it stylistically by a cut and dried process of classification. It is reminiscent of certain types because the architect, through loving study and long familiarity with those types, was imbued with their subtle spell, and naturally incorporated somewhat of their spirit in fresh creative work because that spirit, by assimilation, had become a part of his own mental background. But the chapel is *only* reminiscent; it is not mimetic. The whole composition is perfectly sincere and free from any tricks or affectation and there is not the least hesitation in departing from alluring precedent by frankly making the special requirements of the individual case a matter of the first importance and by utilizing local resources in an original and, let us add, wholly common sense manner.



Detail of Tower, St. George's Chapel, Lake Mohegan, New York
William Lawrence Bottomley, Architect

Description of Churches in the Plates

CHURCH OF THE EPIPHANY, SHERWOOD, WEST PHILADELPHIA, PA. PLATES 51–55. In designing this church a very desirable piece of land which was to be the building site afforded a rare opportunity for the architects. A tower was always contemplated, and to place it with the best effect was an abiding thought. The land, consisting of about three-fourths of an acre, had irregular boundaries, by virtue of which it was possible to place the church in any one of several directions, each having the tower on axis with the street terminating obliquely opposite it.

Early Study for Church of the Epiphany
Showing Thicker Proportions than Completed Structure

An early perspective design produced by the architects and shown herewith displays lower and thicker proportions than appear in the finished church. Upon additional seating space being found necessary, the architects' advice to make the building longer and higher without changing its width fortunately prevailed with the church authorities. This modification is the more readily noticed in the tower.

The churches built in this neighborhood are nearly all of the mica schist stone from Chestnut Hill (Philadelphia). It is generally used, when economy is to be considered, as a rock face stone, and in thicknesses which run from one and one-half inches up to six inches. Manifestly the use of stone six inches high makes a very coarse surface which ill accords with the fine detail called for by Gothic doors, windows, traceries, pinnacles and the like. In this church, therefore, the maximum height of the stone was restricted to three inches and the length to a minimum of one foot. This gives a beautiful texture and, by virtue of the narrow stone, very little rock face. The masonry, therefore, does not distract the eye as is the case where larger stones are used. The use of the local material in this manner is regarded as a salient feature of the design. Furthermore, its use in this way enabled the pinnacles of the tower to be built of the same material as the main walls. This is quite a departure from local custom and less expensive than is the cut stone ordinarily used. The keeping of the whole design restrained to the utmost degree has been carried out even to the extent of substituting a parapet consisting of a frieze of letters in low relief, forming inscriptions, for the usual crenelated and less restful battlement, to the end that the more ornate design at the top of the tower might stand out more prominently by contrast with the simplicity of the rest of the church. The architects were fortunate in that, while it was not at first contemplated, the use of designed furniture for the chancel and other parts of the interior enabled them to add immeasurably to the success of the building.

HOLY SPIRIT PARISH PROTESTANT EPISCOPAL CHURCH, MISSOULA, MONTANA. PLATE 61. The general scheme as shown by the plan forms a rectangular close, bounded on three sides by the structures. The rectory will be built at a later date to harmonize with the rest of the group. The exterior walls are faced with a rough wire cut brick, varying in color from a dark reddish brown to a light brown and laid up with seven-sixteenths of an inch flush mortar joint. The trimmings are of buff sandstone varying in shade. The present roof is temporary and is covered with cedar shingles to be replaced with variegated slate in graduated thicknesses. Those windows throughout that open are steel casements. The glass of other windows is set in the stonework. The main entrance is unfinished. It is contemplated to have a decoration in low relief cast in lead and placed in the tympanum over the entrance doors. The roof construction on the interior of the nave is formed of open trusses, purlins, and rafters of Oregon pine. The walls are plastered throughout. Stone quoins surround the windows of the nave and the plastering is brought up flush with them.

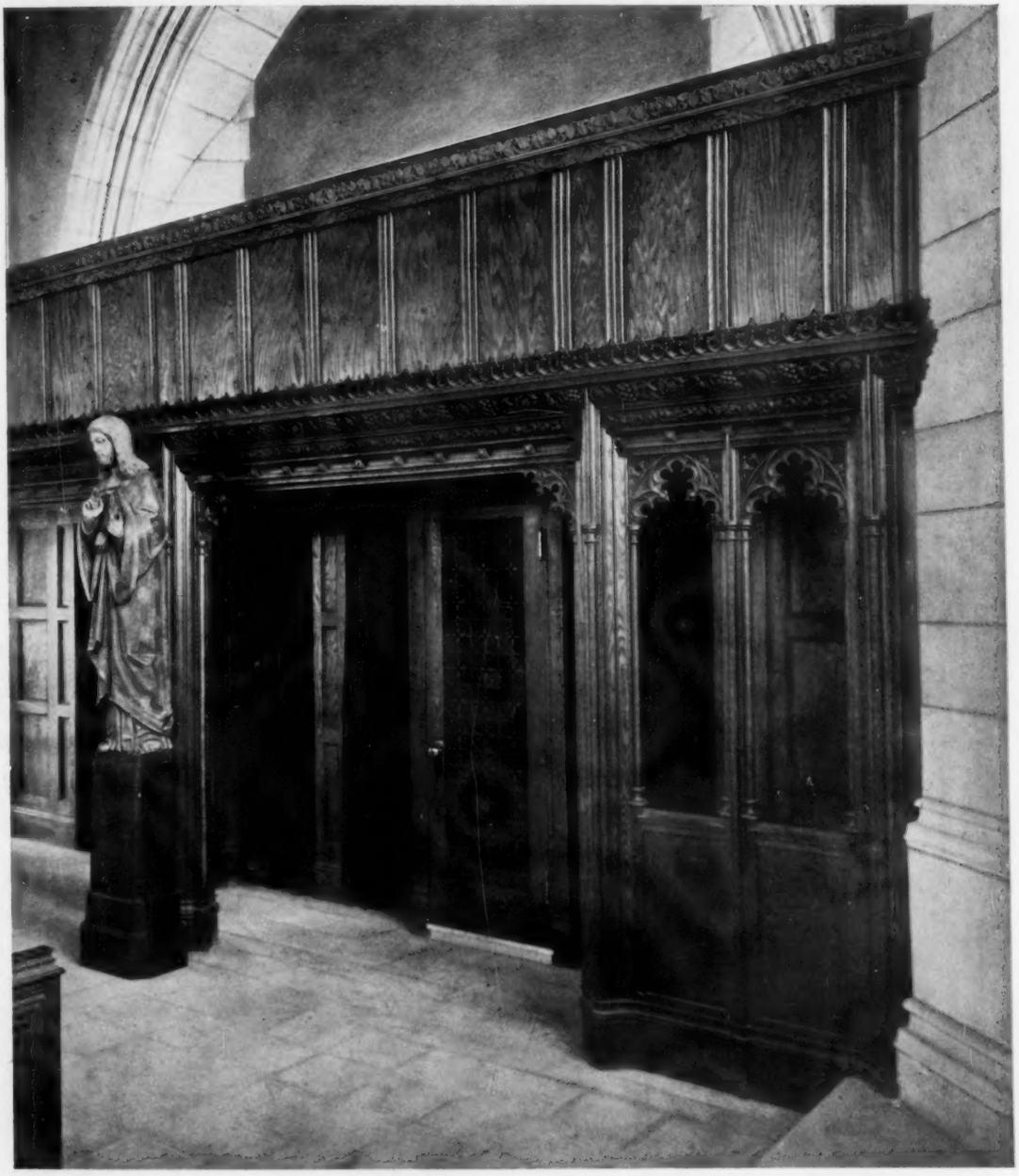
CHAPEL, CLINTON FARMS, CLINTON, N. J. PLATE 62. This chapel, erected as a memorial at Clinton Farms, is built of terra cotta blocks covered with stucco and trimmed with brick, thinly painted. The entrance steps, of painted brick with a wrought-iron railing, lead up to the porch under which is a reproduction of a blue and white Della Robbia.

The chapel itself is finished with plain plaster walls trimmed with deep red brick and decorated with other Della Robbia reproductions. The main chapel is so arranged that the curtains in the chancel arch can be drawn when other functions than religious ones are to be held. There is a separate sacristy for Catholic and Protestant officiants. The altar is of carved stone, painted and gilded; over it is a memorial window. The basement is occupied by a schoolroom.

Screen at End of Chapel · St. Mary's Hall · Boston College · Maginnis & Walsh Archts

THE FORUM COLLECTION OF MODERN GOTHIC ARCHITECTURAL DETAILS

PLATE NINE

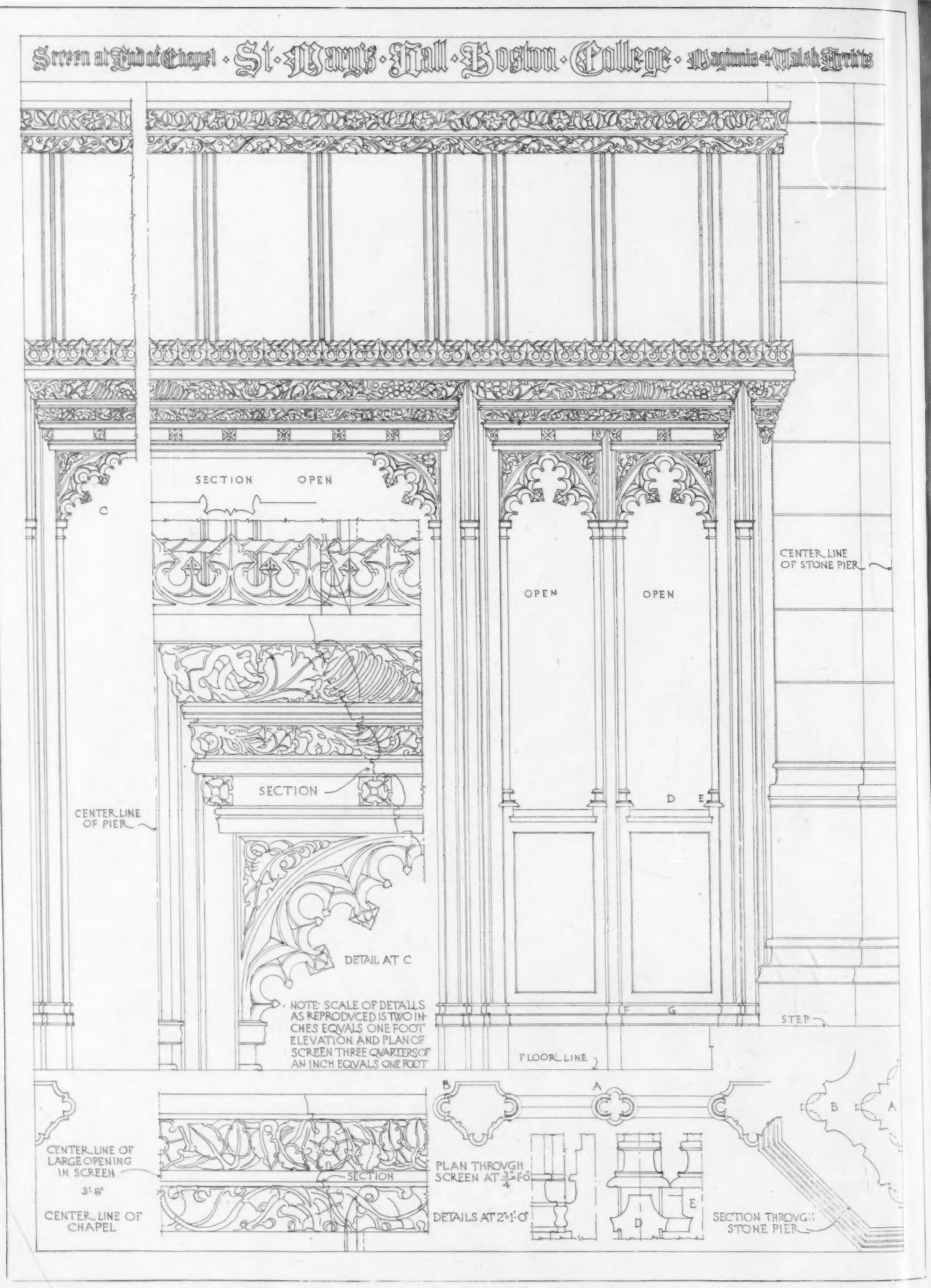


THIS illustrates one half of a screen at the rear of the Chapel of Boston College, in which small scaled Gothic forms have been used in oak, following early English precedent. It supports a small organ gallery above and screens the two confessionals directly behind, and a secondary entrance at the left, giving access to them from the outside.

CHAPEL SCREEN, ST. MARY'S HALL, BOSTON COLLEGE, NEWTON, MASS.

MAGINNIS & WALSH, ARCHITECTS

DETAIL DRAWING BY RALPH H. HANNAFORD ON FOLLOWING PAGE


Screen at End of Chapel · St. Mary's Hall · Boston College · Benjamin & Walsh Architects
SECTION OPEN
C
CENTER LINE OF STONE PIER
OPEN
OPEN
SECTION
CENTER LINE OF PIER
D
E
DETAIL AT C
NOTE: SCALE OF DETAILS AS REPRODUCED IS TWO INCHES EQUALS ONE FOOT ELEVATION AND PLAN OF SCREEN THREE QUARTERS OF AN INCH EQUALS ONE FOOT
F
G
STEP
FLOOR LINE
B
A
CENTER LINE OF LARGE OPENING IN SCREEN
3'-8"
CENTER LINE OF CHAPEL
SECTION
PLAN THROUGH SCREEN AT 3/4"=1'-0"
DETAILS AT 2"=1'-0"
E
D
SECTION THROUGH STONE PIER

Lighting Fixtures for the Church

By E. DONALD ROBB

ACCOMPANIED BY SKETCHES OF OLD AND MODERN ENGLISH LIGHTING FIXTURES BY E. T. P. WALKER

THAT question of the lighting fixtures for the church! Who has not been baffled by it?

If we take our Gothic from Pugin, Bond or the " Sketch Book " we look in vain for suggestions, and the reason is plain enough, for as a general thing they did not have lighting fixtures in the Middle Ages.

It is true that if we turn to our books on Spanish iron work, we shall find certain sconces or very elaborate hanging fixtures, but somehow they seem crude and much too barbaric for our delicate tastes.

Then we make a tour of the lighting fixture houses to see what they have to offer in " Gothic." We are shown many articles in that line all be-cusped and be-crocketed and ornamented with pointed arches to prove the designer's familiarity with the style; and covered with hammer marks to prove they are handmade.

We do not find them suited to our refined tastes, rather they remind us unpleasantly of the " Gothic " apartment house we pass every day going to and from the subway, or the cafe where we have lunch.

Neither do we like those fake candles with little glass flames screwed into the ends.

We return to the office and look through our classified magazine plates. Now we begin to see light, for we have come to some modern English churches where this question, as well as many others, has been solved for us.

Bodley, Bently, Scott and Comper have taken the old iron candle brackets of the Middle Ages and the oil lamp holders of the last century and have worked them into interesting forms for electric lights.

We still find some modern churches where the architect has evidently persuaded the clients to retain a few candles for sentimental reasons, but there is small chance of our being able to " put this over " in these United States.

Let us accept the conditions imposed by the modern electric light and make the best of them.

In designing fixtures, of course, we should never forget that they are intended primarily to shed light and secondarily to be good to look at. If they fail in the first, they will never be thought beautiful by those who know them intimately. The method of lighting a church auditorium, or any large room, whether by hanging fixtures, brackets or standards, is a question which deserves some study. Probably the most popular way to light the former is by chandeliers hung from truss or vault, or from brackets projecting far out from the clerestory wall.

Here is an opportunity to add interest to the otherwise empty space which is the result of our unusually wide naves; and our fancy is free to do many things that are not possible with the bracketed light.

We can use either chains or rods in any number, although it is well to remember that three of them will not hang symmetrically from all sides. If we use chains, they can be of long links or short ones — or both in combination. If we use rods, they also can be long or short or both. They can be twisted at intervals and touched with gilt and color.

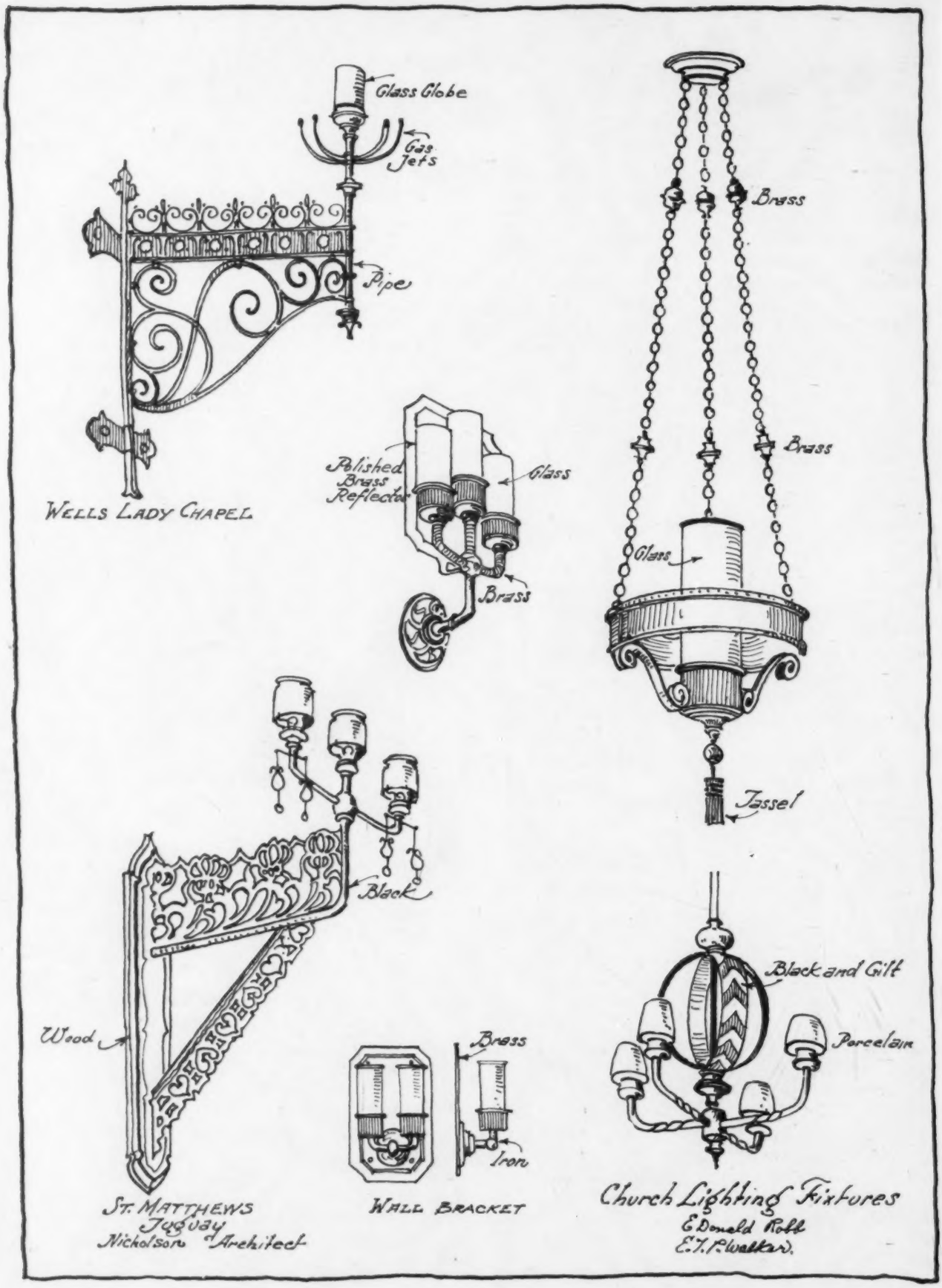
The lamps may hang from the ends of silk cords unadorned by socket cover or reflector, as shown in some of the illustrations, or they may grow from elaborately wrought silver or iron reflectors. Others may combine a reflector with an inverted glass chimney or silk shade. The parts of the fixture should never be needlessly heavy. It is better to err on the side of delicacy than clumsiness; for we have now passed safely through the " mission " period and only the timid engineers require large factors of safety.

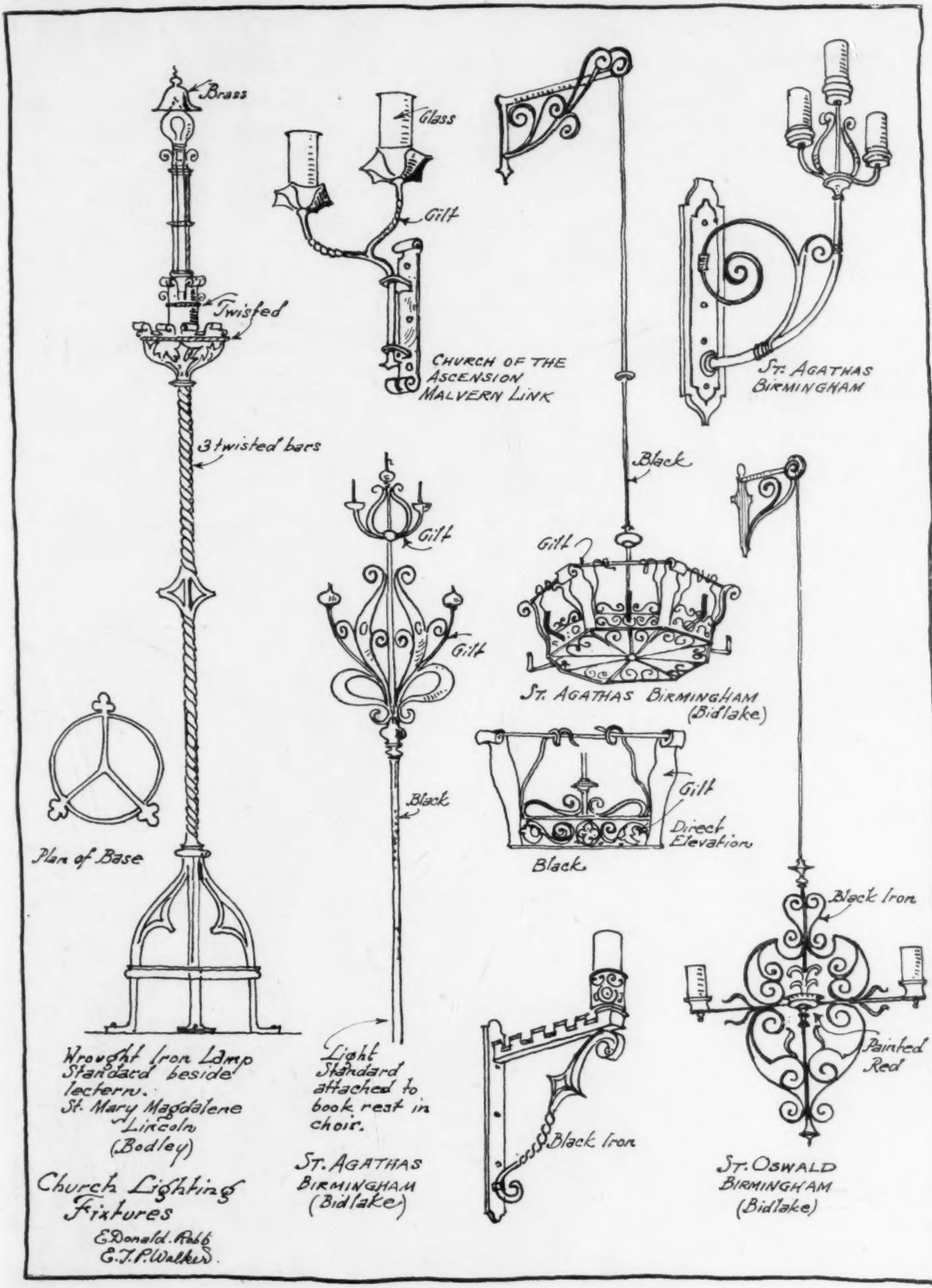
Another thing is well worth remembering in connection with hung fixtures. While we may imagine our chains describing graceful curves from the canopy to the lights, we are very apt to be disillusioned when we see them hung in place, for unless the chains are weighted at intervals with balls or ornamental scrolls, they will most certainly be pulled taut by the weight of the hoop or other features below.

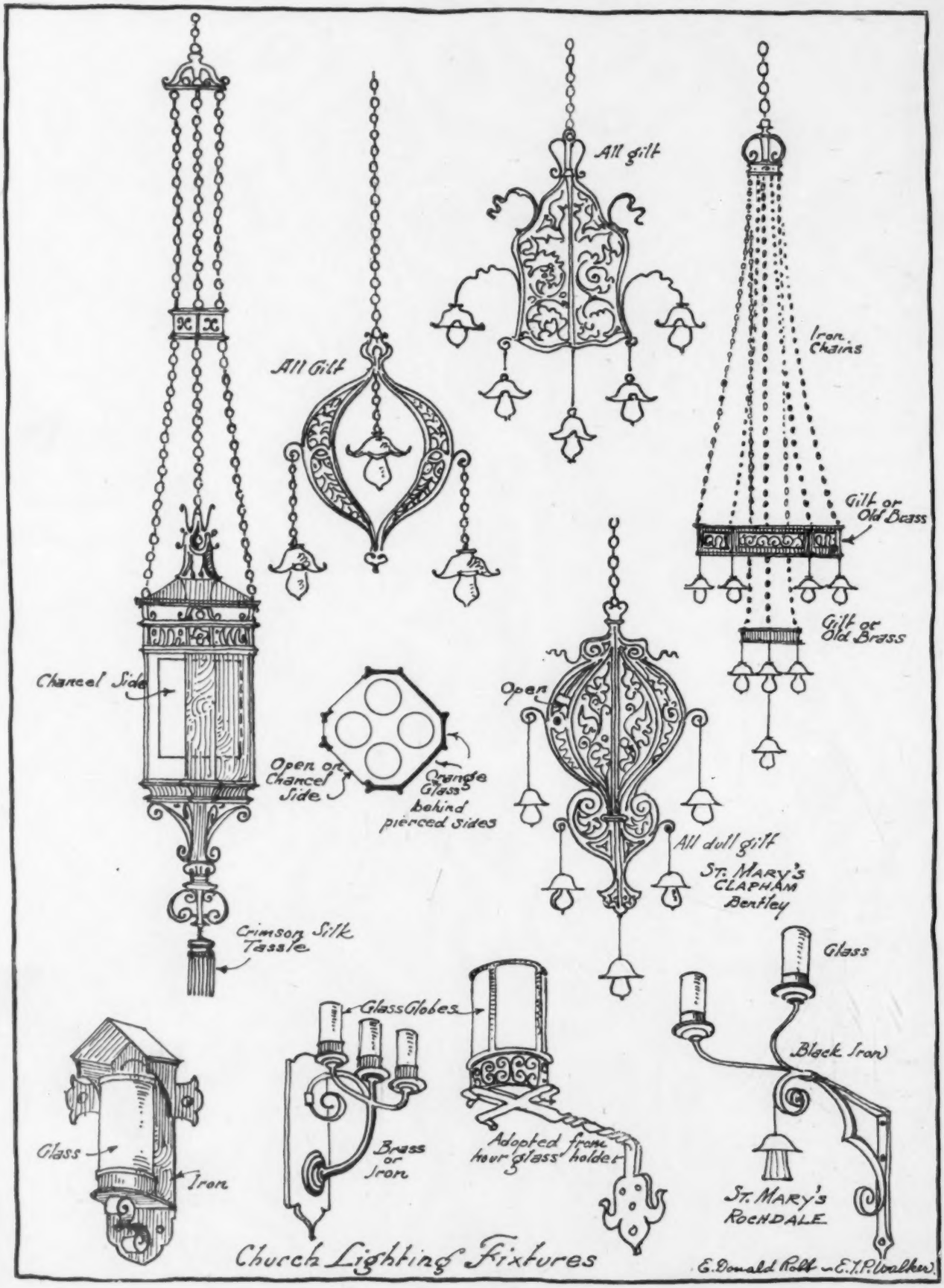
From a practical standpoint, the hung fixture is probably the best, for it delivers the light nearest to the place where it is required; and yet we are usually compelled to pay for a needless amount of piping and wiring, which is sometimes attended by structural difficulties, in order to get the current to the fixture. Is it not much more sensible to use standards attached to the backs or the ends of the pews with our BX all below the floor? Examples of this kind of fixture are not common, but the two illustrations may serve as suggestions upon which others may be built.

Much might be said concerning bracket lights if space permitted. It is likely, however, that the accompanying sketches will be more helpful than descriptive text.

It is greatly to be regretted that the ready-made fixtures in — so-called — Gothic are so very inferior to those we can buy in the Renaissance styles. We are compelled to have them hand wrought to our order — which indeed is the proper way. They need not be expensive if they are reduced to their simplest terms, and after all the simplest is often the best.


Glass Globe
Gas Jets
Pipe
Wells Lady Chapel
Polished Brass Reflector
Glass
Brass
Brass
Brass
Glass
Tassel
Black
Wood
St. Matthews
Jugay
Nicholson Architect
Brass
Iron
Wall Bracket
Black and Gilt
Porcelain
Church Lighting Fixtures
E. Donald Robb
E.T.P. Walker


Brass
Twisted
3 twisted bars
Plan of Base
Wrought Iron Lamp Standard beside lectern. St. Mary Magdalene Lincoln (Bodley)
Glass
Gilt
CHURCH OF THE ASCENSION MALVERN LINK
Gilt
Gilt
Black
Light Standard attached to book rest in choir.
ST. AGATHAS BIRMINGHAM (Bidlake)
Black
ST. AGATHAS BIRMINGHAM
ST. AGATHAS BIRMINGHAM (Bidlake)
Gilt
Direct Elevation
Black
Black Iron
Black Iron
Painted Red
ST. OSWALD BIRMINGHAM (Bidlake)
Church Lighting Fixtures
E. Donald. Robb
G. T. P. Walker.


All gilt
All Gilt
Iron Chains
Gilt or Old Brass
Gilt or Old Brass
Chancel Side
Open
Open or Chancel Side
Orange Glass behind pierced sides
All dull gilt
ST. MARY'S CLAPHAM Bentley
Crimson Silk Tassle
Glass
Glass Globes
Black Iron
Glass
Iron
Brass or Iron
Adopted from hour glass holder
ST. MARY'S ROCHDALE
Church Lighting Fixtures
E. Donald Robt - E. J. Walker

The Problem of the Impossible Contract

By WILFRED W. BEACH

IN previous articles* having to do with the rapid increase of those systems of building construction collectively styled "cost-plus" work, the writer has touched upon the practical impossibility of so wording a contract, covering such building as legally to safeguard the owner's part therein.

A considerable majority of such documents are at present drawn without the assistance of an architect; done either by the business solicitor of the building company or by an attorney called upon for the purpose. This latter will likely prepare one without much trouble (under the careful dictation of the aforesaid solicitor) but he will undoubtedly overlook certain essentials, the omission of which render the instrument worthless to the owner, except as a record of what *he* intended thereby. But it serves the purpose of the builder quite well — as was its real intent.

The difficulty in making it a *bona fide* contract, equally protecting both parties, depends not at all upon the method provided for the remuneration of the "contractor." Whether or not he professes to guarantee the maximum cost makes some difference. Without such guaranty, he is simply a purchasing agent and superintendent for the owner, making use of his special ability in providing an organization and equipment for the assembling of the needed materials and their fabrication and installation, and for the designing also, if the builder employs the "architect."

In the latter event, if the guaranty is also tacked onto the proposition, the builder becomes a *de facto* contractor, endowed with the vicious privilege of formulating the details of the contract *after* the instrument is "signed, sealed and delivered"; and, later, the function of officially interpreting its terms.

Thus the two chief defects which our lawyer friend quite fails to remedy for the benefit of the owner are the real lack of a limit of cost of the structure and the limit of profit of the builder. A third is the lack of a time limit for the period of construction. We know that none of these things can be guaranteed by such a contract.

If we are to assume that our profession should continue to control that large field of commercial building which is now being so thoroughly harvested by those builders who seek to supplant the architect entirely, then it is needful that we analyze such contract forms to the end that with changes they will conserve the welfare of *both* parties thereto.

To perform adequately our duty to our clients we must go even further and determine if the business administration of the building organization is such as to make for economy of overhead expense, as well as for efficiency in purchasing, directing operations and so forth. For, to decide properly which of two or more candidates for a given work is to be retained, we should be possessed of a thorough understanding of what constitutes a proper financial return for such services and also to what extent the overhead expenses are covered in such remuneration and what proportion of same is to be charged directly to the job or to be paid for out of other building funds.

We should lose no time in standardizing these matters. There should be no reason for doubt as to what a builder should receive for the service rendered in a given construction — nor should the latter be the sole arbiter in the matter. He can scarcely be considered an unprejudiced party. At present, he gets all he can, plus all-else-possible, in most cases.

While it must be admitted that the average of these new concerns which have jumped into the "cost-plus building game" without having graduated from general contracting, have a far better business organization than the average of the old-fashioned builders, yet it does not follow that this conduces to the advantage of the "ultimate consumer." It can hardly be demonstrated that it was so intended.

Let us then consider what constitutes a fitting emolument to the builder of our structures, assuming that we are not yet prepared to embark upon such enterprise ourselves, as an adjunct to the present business of our profession. When we do decide to launch forth in that direction, the same information will be of value in determining our own charges.

To insist in arriving at this, let us differentiate on the start between that class of constructionists who can be said to operate in a strictly ethical manner, eliminating unnecessary office and operating expenses, eschewing undue advertising and depending upon good reputation for the acquisition of new business; and that other class having less stringent ethics (or none at all) which operates on an elaborate scale and spends abnormally for business solicitation.

At the outset, then, we need to distinguish between normal and abnormal overhead expenses. Obviously, our client should have the privilege of deciding whether or not he wishes to pay for the abnormal as well as the normal — whether other characteristics of the service offered by a concern sufficiently outweigh those of another builder unit normally conducted.

Also, under the title of normal overhead costs, we should set apart those that are general to the business of the builder from those that are directly chargeable to the particular work under consideration. These costs do not automatically classify themselves under these two headings.

For instance, we may say in a contract that all

*June and July, 1917; September, 1918.

overhead expenses directly ascribable against the work shall be paid for by the owner and that all other overhead expenses incidental thereto shall be borne by the contractor. This is not sufficiently specific. Neither is it enough to state that such overhead work as is carried on at the site shall be billed to the owner and that the contractor's own office expenses shall be taken care of by himself. There is naught to prevent his moving half, or the whole, of his office to the job. Nor does such generalization take proper care of architectural and engineering services. These should never be left, in cost-and-per-cent work, to be paid for by the contractor, but should be billed in the same fashion as all other specific charges against the job.

To be more concise, we must resolve the whole subject of overhead expenses, for it may otherwise prove a very misleading term instead of being the precise expression supposed. Such exegesis might be very illuminating to the average of those owners who have already been on one side of this kind of contract, having been misguided thereinto under the allegation of its "simplicity." It would serve to broaden his view of the whole building problem by exhibiting the multiplicity of details, large and small, which were overlooked when that contract was drawn, but each of which probably meant an added increment to that swollen fund ambiguously alluded to as "plus."

Proceeding then to a tabulation of the whole subject matter of such a contract, we can divide it under the following heads and subheads, due regard being given to each item with especial reference as to whom belongs the responsibility for its performance (or neglect) and by whom the cost is borne.

I ADMINISTRATION.
- A. Office Duties of the Contractor.
  - a. General administration.
  - b. Checking drawings and specifications.
  - c. Estimating quantities and costs.
  - d. Preparing shop drawings.
  - e. Preparing bills of materials.
  - f. Advertising for and receiving bids.
  - g. Letting and executing contracts.
  - h. Miscellaneous purchasing.
  - i. Employing miscellaneous labor.
- B. Field Duties of Contractor.
  - a. Interpreting drawings and specifications.
  - b. Co-ordinating and directing forces.
  - c. Inspecting materials.
  - d. Supervising construction.
  - e. Superintending special contracts.
  - f. Receiving and checking materials.
  - g. Hauling.
  - h. Storing.
  - i. Policing.

II OVERHEAD.

(Under this caption come all expenses for items of organization, "make-ready," etc., due to the construction, or business incidental thereto, and which do not remain tangible parts of the completed work.)

- A. Architectural Services.
  - a. Preliminary consultations, sketches, etc.
  - b. Research.
  - c. Designing.
  - d. Landscaping.
  - e. Preparing working drawings.
  - f. Writing specifications.
  - g. Preparing detail drawings.
  - h. Checking.
  - i. Supervising the following:
    1. Preparation of shop drawings.
    2. Purchasing materials.
    3. Letting of contracts.
    4. Inspection of materials.
    5. Installation of contract items.
    6. Care of stores.
    7. Handling of labor
    8 Disbursements.
    9. Auditing of accounts.
    10. Acceptances.
  - j. Travelling and hotel expenses.
- B. Engineering Services.
  - a. Foundation engineering.
  - b. Structural engineering.
  - c. Reinforced concrete engineering.
  - d. Electrical engineering.
  - e. Mechanical engineering:
    1. Power plant.
    2. Heating plant.
    3. Cold storage plant
    4. Filtration plant.
    5. Ventilating plant.
    6. Miscellany.
  - f. Sanitary engineering.
  - g. Acoustical engineering.
  - h. Illuminating engineering.
  - i. Engineering of special subjects.
  - j. Surveying.
  - k. Preparing shop drawings.
  - l. Checking.
  - m. Testing.
  - n. Inspecting.
  - o. Traveling and hotel expenses.
- C. Legal Services.
  - a. Review and approval of contracts.
  - b. Review and approval of bonds.
  - c. Arbitration of disputes.
  - d. Settlement of mechanics' liens.
  - e. Defense of suits.
- D. Insurance.
  - a. Fire insurance.
  - b. Tornado insurance.
  - c. Earthquake insurance.
  - d. Accident insurance.

e. Employees' liability insurance.
f. Guaranty bonds.
g. Pensioning.

E. Make-Ready at Site.
a. Disposition of existing structures.
b. Protecting permanent objects.
c. Clearing site.
d. Temporary fences.
1. Billboard privilege.
e. Temporary walks.
f. Temporary offices.
g. Temporary storage sheds.
h. Temporary toilet facilities.
i. Workmen's temporary shelters.
j. Transportation of employees.
k. Housing of employees.
l. Feeding employees.
(Note: Items k and l apply only to large isolated structures.)
m. Laying out work.
n. Shoring or otherwise protecting adjoining property.

F. Apparatus and Utensils.
a. Excavating equipment.
b. Barrows and buckets.
c. Pile drivers.
d. Concrete and mortar mixers.
e. Temporary power plant.
f. Hoists.
g. Temporary heating devices.
h. Forms.
i. Scaffolding.
j. Jacks.
k. Ladders and stairs.
l. Tarpaulins.
m. Trade tools.

G. Permits and Fees.
a. General building permit.
b. Special building trade permits.
c. Trade union assessments.
d. Licenses.
e. Fines.
f. Royalties.
g. Water fees.
h. Electric current fees:
1. Office lighting.
2. Construction lighting.
3. Lighting for special contracts.
4. Power current.
i. Miscellaneous fees.

H. Storage of Materials.
(See E-g for provision for temporary warehousing.)
a. Store keeper and assistants.
b. Limits of storage at site.
c. Storage away from site.
d. Storage at site of materials for other jobs.
e. Temporary leasing of space on premises to outsiders.
f. Demurrage.

J. Cleaning and Salvage.
a. Re-use of salvage.
b. Using other second-hand materials.
c. Disposition of rejected materials.
d. Disposition of debris.
e. Disposition of second-hand materials.
f. Disposition of surplus materials.
g. Disposition of used equipment:
1. Property of contractor.
2. Property of subcontractors.
3. Property of owner.
h. Cleaning building for acceptance.

K. Office Expenses, Specific.
a. General management.
b. Employing.
c. Bookkeeping.
d. Time keeping.
e. Corresponding.
f. Miscellaneous clerical.
g. Office furnishing.
h. Office supplies.
i. Telephone rental.
j. Telegraph tolls.
k. Travelling and hotel expenses.

L. Emergencies and Policing.
a. Owner's errors.
b. Architect's errors.
c. Engineering errors.
d. Builder's errors.
e. Errors of other employees.
f. Flood damage.
g. Other non-insurable accidents.
h. Damages due to delays:
1. To owner.
2. To subcontractors.
3. To adjoining property owners.
4. To other individuals.
i. Strike and riot disturbances.
j. Theft.
k. Watchmen.
l. Special guards.
m. Miscellaneous protective measures.

III PURCHASING.

Under this head, there should be an exact understanding as to the extent to which the owner intends to direct personally the purchasing, and the restrictions he wishes placed upon the contractor as to that party's financial interest in the purchases made or contracts awarded.

A. By Competitive Bidding.
a. Minor items below stipulated amount.
b. Major items above stipulated amount.
c. Advertised or selective competition.

B. In Open Market.
  a. Minor items.
  b. Major items.
C. By Force Account.

IV FINANCING.

A checking account being necessary to run the job, it must be decided whose are the funds to be deposited for the purpose and how and by what authority payments should be made therefrom.

A. Appropriated Funds on Hand.
  a. Ownership of funds.
  b. In what name carried.
  c. In what bank carried.
  d. Amount of average balance.
  e. Interest on average balance.
B. Disbursements.
  a. Petty cash items.
  b. Auditing of vouchers.
  c. Signing and countersigning of vouchers.
  d. Discounts.
  e. Payroll.
  f. Monthly statements.
  g. Partial payments of continuing contracts.
  h. Final payments of continuing contracts.
  i. Reserve balances to cover guaranties.
  j. Mechanics' liens.
  k. Damages.
  l. Professional fees.
  m. Builder's profits. (See V.)
C. Limitation of Cost.
  a. No guaranty.
  b. Guaranty by cash deposit or certified check.
  c. Guaranty by deduction from profits.
  d. Guaranty by surety bond.
  e. Extra items not covered by guaranty.

V CONTRACTOR'S PROFITS.

A. Lump Sum.
  a. Method of determining.
  b. Effect of extras on same.
B. Percentage on Cost.
  a. On what reckoned.
    1. Items purchased by contractor.
    2. Items covered by separate contracts.
    3. Items supplied by owner.
    4. Professional services.
    5. General overhead expenses.
    6. Specific overhead expenses.
    7. Fees and licenses.
    8. Miscellaneous items.
    9. Furnishings.
    10. Decorating.
C. Other Profits.
  a. Purchasing (agent's) commissions.
  b. Discounts.
  c. "Volume of Business" and other special rebates.
  d. Dividends from ownership in supply and subcontracting concerns.
  e. Royalties.
  f. All other "drawbacks."

These last items of "Other Profits" will bear especial watching. While some of them may be ethical; if permitted by the client, others are distinctly the reverse. The safest procedure is the elimination of the entire group, but this is not always practicable. If a builder owns a shop or warehouse and is better able to serve his clients by buying in car lots or by fabricating certain materials, it should be permissible for him to do so and to receive additional remuneration; but this should be the subject of a specific understanding between the parties.

To be sure, the importance, or relative importance, of many of the items scheduled will vary directly with the size of the building and the amount of the total expenditure. The size of the builder's fee and the number of duties to which he will be expected to give his personal attention will also vary accordingly. And these two will be interdependent.

If, as is usually the case with large undertakings, the constructing unit is a building corporation, in which every employee assigned to the work (save some of those in the home office) is remunerated directly therefrom, then manifestly the size of the fee can be less. In this case all costs of superintendence and management are paid by the owner as salaries, the fee only paying overhead and dividends.

Now, in order to arrive at an approximate idea of what would form a just basis for the reckoning of such fee, let us consider a typical building corporation of moderate capitalization, say $100,000, with two chief members, both competent builders and giving their entire time to the business, one to the office management and one to outside affairs.

Such a concern could readily handle a gross average business of $1,200,000 yearly, with an aggregate general overhead expense about as follows:

Salary of manager	$5,000.00
Salary of assistant manager (estimator)	2,000.00
Salary of superintendent	5,000.00
Salary of assistant superintendent (paymaster)	2,000.00
Salary of bookkeeper	1,800.00
Salary of assistant bookkeeper	1,000.00
Salary of chief clerk	1,500.00
Salary of stenographer	900.00
Salary of office boy	600.00
Office rent	900.00
Automobile and upkeep	900.00
Equipment and upkeep	4,200.00
Miscellaneous travelling expenses	1,500.00
Incidentals	1,500.00
Interest on capital stock	6,000.00
Emergency and sinking fund	6,000.00
Taxes, insurance, etc	1,200.00
Total annual income	$42,000.00

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A gross return of $42,000 or forty-two per cent on the capital stock would thus bring a net return to each "partner" of $5000 in salary and $3000 in dividends. Each additional one-half of one per cent charged on the volume of business would bring him an added personal profit of $3000; thus, if they did business at four per cent, each would draw an annual income of $11,000.

These figures are purely arbitrary and capable of much manipulation. But the gist of the whole matter is that lucrative gains can be made in such business at a moderate percentage charge on gross costs, provided that the affairs of the company are economically administered.

Another feature of the problem that must be given consideration is that, included in the gross business of the company is the oversight of contracts concerning which the function of this builder is that of superintendent only. Obviously, he should receive a lower commission on these purchases than on those items for which he handles all details. Architects receive from two to five per cent for such service, according to size and character of the work. The builder, if he performs the same duties, is entitled to similar fees.

Curiously enough, it has recently been decided by an Illinois court that a general contractor under a cost-plus-per-cent contract is entitled only to "the actual cost of the labor and material to the subcontractor, plus the specified percentage thereon, and not the amount for which the subcontract was let plus such percentage thereon."

This decision would allow the general contractor nothing for the performance of his functions as purchasing agent and superintendent for the owner, nor does it take cognizance of the fact that the average subcontractor has a heavier investment in proportion to the amount of business transacted than has the general contractor — must, therefore, charge a larger commission on his contract, sometimes as high as twenty-five per cent gross, as against the general contractor's four or five per cent. And, again it may be shown that the decision is quite contrary to custom; but the answer of the court to that may well be that one's contract should be specific, regardless of custom.

In all the foregoing, I have considered only the case of a building concern of medium size doing the average business in fair-sized buildings of which its organization is capable and with "normal" overhead costs. A smaller business or a business of smaller jobs would show less profits or must collect higher fees and, inversely, a larger unit erecting greater structures could operate for less.

When, however, a building concern indulges in "abnormal" overhead expense, it can quickly run up those costs. Under this head, I would class:

1. Rental of expensive office suites.
2. Elaborate display advertising.
3. Costly "pamphleteering."
4. Assiduous personal soliciting.
5. Fees for securing business.
6. Unearned salaries to principal stockholders acting as figurehead officers.
7. Promotion expenses.
8. Loan brokerage.

It may be safely assumed that such criticism as this article may evoke anent the subject of proper commission for "cost-plus work" will emanate from either of the two classes into which most of the larger concerns of this kind can be divided. The one class includes those spending for the first, second, third and fourth, and perhaps the fifth and sixth of the above items, while the second class embraces those giant promotion and construction corporations which "get behind" a sound commercial venture that needs more backing than can be had through regular financial channels and, by virtue of the support thus given, are able to dictate not only the amount of their own fees but also the selection of the architect and much else relating to the policy and development of the project.

It is such as these that have done much toward generalizing a ten per cent fee charge for building service, when, in reality, a large part of the service they render is purely promoting and should be paid for as such, instead of under the guise of construction. Thus, in criticising this, as well as any other such fee, there must always be taken into consideration the kind, character and extent of service rendered. Those that redound to the benefit of the owner are correct, of course; others are open to question. And it is difficult to understand how any of the first six of the abnormal expenses listed can work benefit to the client. It is said that some of the concerns thus operating spend many times as much in such manner as for legitimate operating expenses. This means that the owner employing such a one pays two to five per cent, or more, of the cost of his building to finance the advertising and traveling salesmanship of his contractor.

Perhaps the conclusion of the whole matter is that, for small work, say under $25,000, the fee should be from eight to twelve per cent; for work running from $25,000 to $100,000, six to eight per cent, and for larger work from three to six per cent; all depending upon the size and character of the construction. The contractor pays out of his fee only the general office expenses I have indicated, all other overhead costs being met by the owner. The exact line of demarcation between these, as well as a flexible sliding scale of fees, could and should be worked out and more or less standardized in order that we may intelligently make recommendations to our clients.

GENERAL LIBRARY

EDITORIAL COMMENT

THE most recent happening of interest to architects in these days of fast changing conditions is the order of the War Industries Board, through the State Councils of Defence, restricting all building exceeding $2500 in cost, not directly connected with the war. This order is, of course, a drastic and sweeping measure, but in its effect it will in general change but little the conditions existing now for some time — and, what might be considered an advantage, it definitely determines through the means of an examining board the question of what constitutes essential construction and what unessential. It further has the encouraging feature of placing jurisdiction over building in one board, instead of permitting divers committees to supervise the matter, as formerly was the case, with the constant possibility of confliction of orders. Those operations which have full justification for being carried out may now be placed before an examining board having definite authority, and upon being approved proceed without interruption.

The enforcement of the order will be through priority powers invested in the War Industries Board. Pledges have been secured from all building material manufacturers and dealers not to supply materials which are not authorized under the regulations.

The Government building program has been constantly expanding, and from April, 1917, to the present time, total operations, including those now in prospect, are estimated to have reached the sum of $1,200,000,000. Most of the work now under construction will be completed by the first of the year, excepting some of the larger permanent work, which will extend into the summer of 1919.

The ban on building may, therefore, be looked upon as very temporary. Aside from the fact that the Government's program is now well under way, the general commandeering of existing structures for Government use and the curtailment of private building are fast resulting in consumption of all available space in the larger centers, with the inevitable result that soon this condition must be relieved by more general building. It may confidently be expected that the present hardships will not be prolonged for any great length, and that the early future of the building industry will be especially bright. In contrast to some other industries that are less fundamental and may not be restored to their normal status for some time, building will be the first of peace-time industries to regain a permanent footing.

It is generally understood that the regulation was prompted indirectly by the shortage of labor. It is well known that practically every war industry is not able to reach 100 per cent production because it cannot get the necessary help. It is easy to realize, therefore, that every project not of a war nature is using materials and the labor of men that could at the moment be more profitably employed elsewhere. The speedy ending of the war depends to a large extent on the industries furnishing supplies, and if this work is delayed through the diversion of labor and materials, the cost will be reckoned in American lives.

The enforcement of the order will possibly work damage to some in the building industry, but in the opinion of the authorities this is the lesser loss and one of the deplorable results of war. It remains for those adversely affected to make every effort to find opportunity of serving the Government in completing its huge building program, thereby lending their support in the most effective manner toward ending the war and restoring normal conditions.

In a country so large as the United States and with the activities of the Government necessarily confined to a few sections, there remains the possibility of materials now stocked in some sections lying idle through the operation of this order. It is to be hoped that the ruling will be broadly enough interpreted to recognize the advisability and necessity of permitting work to proceed in those sections removed from war centers, so that local labor and materials may not remain idle, thereby preventing unnecessary business disasters. The recently formed National Federation of Building Industries is providing a needed unified organization to follow these restrictions closely, and from the data it is now collating, the Federation will be in a position to bring to the attention of the War Industries Board any evil effects that too rigid a curtailment may cause.

BOOK NOTE

THE ENGLISH HOME. From Charles I to George IV. Its Architecture, Decoration and Garden Design. By J. Alfred Gotch, F. S. A., F. R. I. B. A. 410 pp. 5¾ x 9 in. 300 illus. New York: Charles Scribner's Sons. London: B. T. Batsford, Ltd. $13.50 net.

Special interest attaches to this volume from a modern architectural standpoint because of the sympathetic manner in which the author has treated the smaller houses in the country districts of England which have contributed in no less measure to English domestic architecture than the larger houses. The work of Inigo Jones, Wren and other masters is not neglected but takes its place in a logical recital of the development of over two centuries. Foreign travel and the comfortable life of the nobility led to a wide appreciation of art, with the result that the noblemen vied with one another in the erection of great houses surrounded with fine gardens. They have symmetrical facades of classic beauty and lofty interiors, but comfortable living and sanitary conveniences were sacrificed to obtain them. The smaller houses, many illustrations of which are given, do not indicate this artificial character and are consequently of much greater value in modern work.